

# SUPPLEMENT.

# The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2465.—VOL. LII.

LONDON, SATURDAY, NOVEMBER 18, 1882.

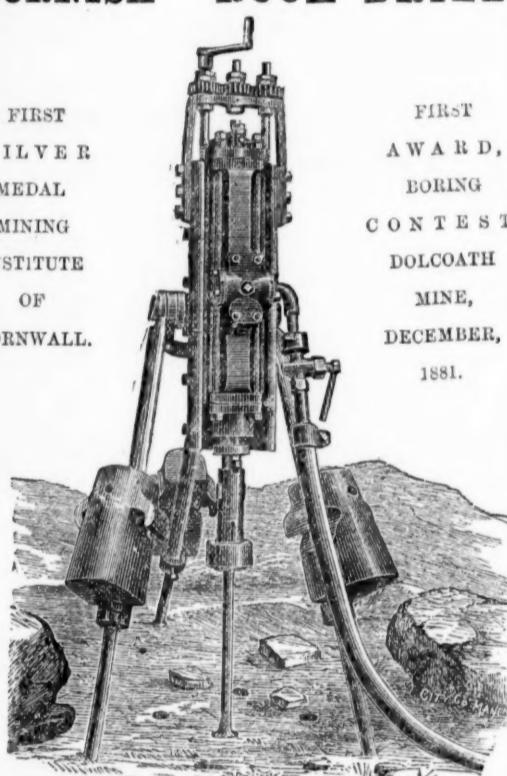
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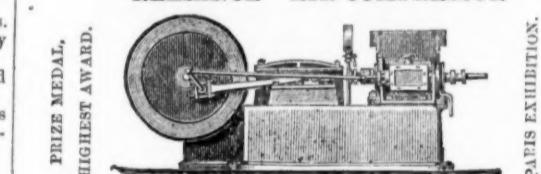
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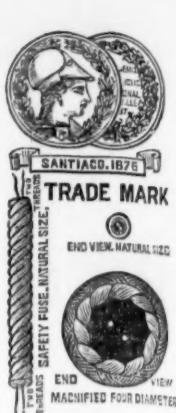


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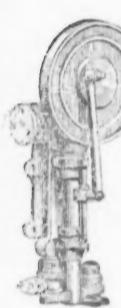
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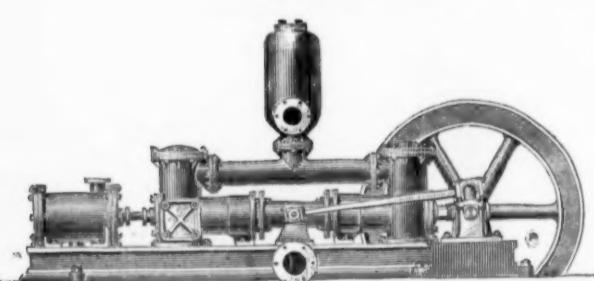
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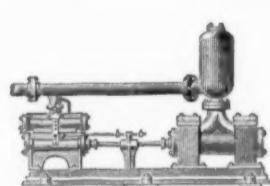


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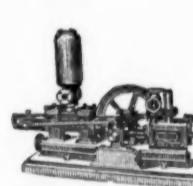
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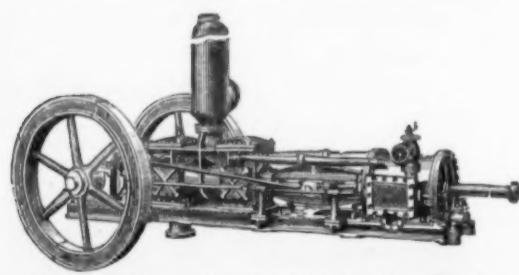
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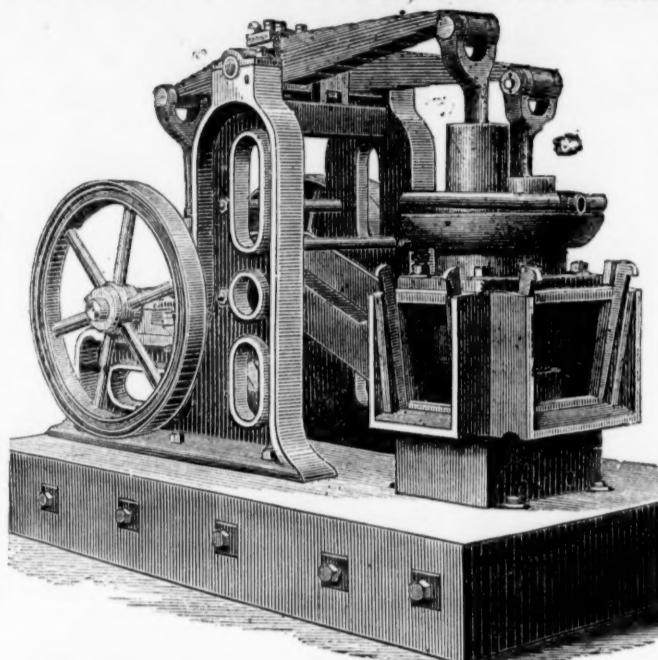
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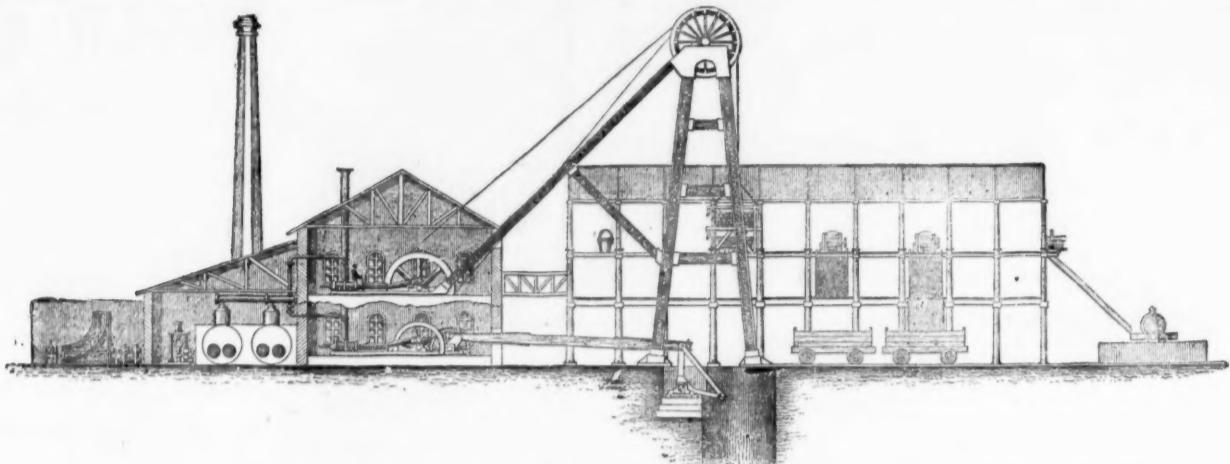
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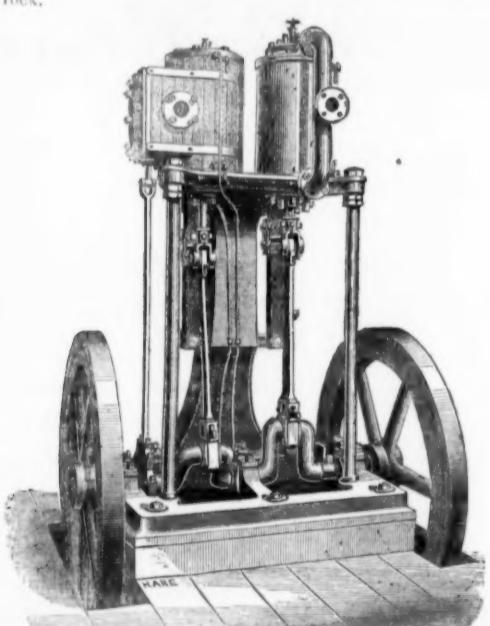
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ANTI-CORRODO TUBES AND FITTINGS COATED BY BARFF'S RUSTLESS PROCESS.

### COPPER MINING IN THE UNITED STATES.

Although the enormous copper deposits of Keweenaw Point on the United States side of Lake Superior for a time prevented any attention being given to properties in other parts of the Union which produced that metal, no matter how favourably they might be situated, the increase of population and extension of industry has caused many copper mines to be thought of elsewhere, and not unfrequently the results, estimated upon the very reliable basis of the dividends paid to shareholders, have been far more satisfactory to those engaged in working them. Among prosperous enterprises of this class is one which was in successful operation long before the Lake Superior mines were even thought of. The mines and works of the Vermont Copper Company of New York have a history going back to the early part of this century. The State of Vermont had a report on its geology written by Edw. Hitchcock, LL.D., and published in two quarto volumes in 1861. At that time the Ely Copper Mine appeared as the most important mining concern in the State, and Dr. Hitchcock's report upon it is of especial interest. It appears that the discovery of copper ore in the locality in question was made in about 1820. The decomposing sulphurets of iron and copper at the surface, and the unusual appearance of the earth that overlies the ore, excited the curiosity of people in the vicinity, and gave rise to reports that smothering fires, fire-balls, smoke, &c., were seen there, and induced them to make excavations to learn the cause. Upon reaching the bed-rock iron and copper pyrites were found, the former quite abundant; and, in accordance with the adage of the Cornish miners, that "mundic always rides a good horse," people were led to believe that valuable copper existed in that hill. Accordingly a company was formed, consisting mostly of people who resided in the neighbourhood—with the view of working the mine—which was styled the Farmers' Company. Excavations were made on the vein, and iron and copper pyrites obtained, when a rude smelting-furnace was erected.

Nothing very energetic appears, however, to have been done until 1853, when some gentlemen of New York City purchased the mines and 248 acres of land adjacent. In the fall of that year a charter was granted by the Legislature of Vermont, constituting them a body corporate, under the name of the Vermont Copper Mining Company, with a capital of \$500,000. In the spring of 1854 the work was systematically commenced under the superintendence of Capt. Thomas Pollard, an intelligent and experienced Cornish miner, since which time the work has been continued under his supervision, and attended with the most gratifying results. The cross-cut adit abandoned by Messrs. Binney and Tyson was at once entered by the workmen, and driven in the direction of the ore, and they had not proceeded 4 feet before it was reached. The bed was found to consist of pyrites associated with mundic, and was from 8 ft. to 16 ft. in thickness, and had a dip of about 42° east. Indications of ore exist at the surface of the ground, for the distance of about one-fourth of a mile, in a line with the strata of the rock. It occurs in the calcareous mica schist, which assumes a gneissoid appearance in the vicinity of the mines. These are situated on the southern slope of a hill, and the drifts or adits are, with the exception of the adit cross-cut before named,

all in or near the line of the ore. The produce of the ore averaged 9 or 10 per cent., and the business of the company increased from year to year, until in 1860 they raised and sold 1312 tons, and had about 140 tons on hand unsold. And that the concern had acquired some considerable celebrity may be judged of from the fact that the old name of Vershire, by which the town where the mines are situated was known, was changed to Ely, in honour of Smith Ely, the President of the company.

With 1866 a new period began for the mines, because then for the first time the smelting of ores and the production of copper thereby was successfully introduced near the mines at Ely; but with regard to them Mr. F. M. F. Cazin, who has recently made an exhaustive and interesting report upon them, states that he finds no records for any earlier period than 1870 as to the product of the furnaces, in which year it appears that 943,461 lbs. of copper were produced and sold. The product then slowly increased, until in 1876 it amounted to 1,646,850 lbs. of copper produced and sold for the year, and for 1880 the product amounted to 3,186,175 lbs., or to over a quarter million pounds per month. The development of the mine became more and more considerable and important, but it had to undergo the same strife to which, in the United States, all exceptionally valuable mines are subjected—a conflict carried into the courts of the States for the title to the minerals explored. Two men, Bicknell and Pollard, being in the employ of the company, had made in their own name purchases of land and mineral rights which were essentially required for the carrying on of the company's business. They sued the company for the value of ore taken out of what they claimed to be their property; but the judgment of the Supreme Court conveyed the title to the company on the ground that the men had acquired the property as officers and therefore as agents of the company. The historical review cannot well be closed without an explanation why even the existence of an enterprise of such enormous dimensions and productiveness should have remained so comparatively unknown to the commercial public and the profession. The copper produced by mine and furnaces has been sold for 12 years past to the same refiner and manufacturer whose interests would not permit him to disclose the source from which he derived the copper, the exceptionally fine quality of which enabled him to put in the market articles surpassing in fineness all other competing products of copper and brass goods. A close investigation by Mr. Cazin into all the circumstances surrounding the enterprise revealed the fact that had the mine at Ely (Vershire) not been such as it was, yielding permanently an abundance of copper ore at less cost than it was worth, even when obtained under a loose management, it would not outlasted litigation and wasteful practices; and that the extraordinary richness of the ore deposits alone could build up, in spite of all the drawbacks in the old company's administration, the large business carried on with 24 smelting furnaces. If the present value of the property, says Mr. Cazin, is a large one, its prospective value is still larger; and, indeed, it appeared a pity that such an enormous and valuable property should not be utilised in a better method and to a larger extent than it had been hitherto.

A careful estimate of cost and product, based on known facts, for

the period beginning Oct. 1, when both the new Rachette furnace (now fired) and the concentration mill (under contract for Oct. 1) will be in operation is given by Mr. Cazin, and shows—Mining 60 tons first-class ore, for roast heaps, at \$4·25 per ton, \$255; mining 120 tons second class ore, for concentration mill, at \$4·25 per ton, \$510; transportation, at 10 c. per ton for 180 tons, \$18; concentration of 120 tons, at \$1 per ton, \$120; transportation to furnace, 12 tons, at 10 c. per ton, \$1·2; reduction of 72 tons, at \$5·50, \$396 = \$1300·4. Against the product of 5½ tons of copper, calculated at only 15 c. per lb., to leave margin for transport to market, administration, and extras, \$1650: leaving a daily net profit of \$319·4, or for the year of 300 days \$104,940. Mr. Cazin, moreover, points out that during the current year of operation the above net margin will be increased by the utilisation of 2000 tons of first class ore now above ground and transferred by the vendors to the new company without special compensation therefor. These 2000 tons of ore contain by careful sampling, assaying, and measurement 80 tons of copper, the total expense of producing which will not amount to \$100, leaving a net margin of \$200 per ton, or a total of \$16,000, which, added to the above \$104,940, makes a total of \$120,940. The new administration (from whom an advertisement appears in another column) considers itself more or less responsible for realising this net profit, which provides for 6 per cent. interest on the company's securities (\$30,000), and for sinking 10 per cent. of these securities (\$30,000), and for improvements (\$40,000). There are no reasons apparent at present why in the second year of operation and even in the latter part of the first year the mine should not produce double the amount above estimated; and why the Rachette furnace as well as the concentration mill capacity should not be doubled, in which case the net margin will in all probability be more than doubled, and would afford where-with to pay a dividend of 8 per cent. on the stock of the company.

### Original Correspondence.

#### STATE AID FOR SCIENTIFIC RESEARCH.

SIR.—With the 29th Report of the Science and Art Department is printed a correspondence between the Department and the Treasury relating to "State Aid for Scientific Research." The correspondence is noteworthy as containing a proposal by the South Kensington authorities to create State Fellowships for the benefit of scientific men. I refrain from attempting to epitomise the whole proposal respecting scientific research, especially as the South Kensington authorities suggest that it has been misunderstood by the Treasury. Suffice it to say that the State Fellowships were to be not less than 200*l.* or more than 400*l.* a year, and limited to a maximum tenure of five years. Upon this the Lords of the Treasury remark that they cannot but view with the greatest reluctance the proposed creation for the first time of State Fellowships. It appears to them that the adoption of this proposal would bring the State into a relation with individual scientific investigators which it is most undesirable that it should occupy. The Treasury, therefore, proposed a modification to the effect that upon the recommendation of a specified committee (connected with the Royal Society) occasional personal payments (*i.e.*, by way of remuneration to scientific men) should be made with the express sanction of the Treasury obtained in every case. This did not meet the views of the South Kensington authorities, who, however, after further correspondence had to acquiesce in the decision of the Treasury.

It is a matter for public congratulation that the Treasury refused to give way. The Treasury remark that the chief difference between themselves and the South Kensington department was that according to the proposal of the latter an extremely large proportion of the total grant is devoted to personal payments, as to which a direct official relation is established. Also the department presumably wished to keep the State Fellowships and the rest of the grant for research under their own control, subject to the recommendations of the committee above referred to. For in their report the South Kensington authorities remark, with apparent regret, that in future the grant will be made direct by the Treasury to the Royal Society, adding that during the five years that the grant has been made through this department much good work has been effected through its aid. It would be interesting to know what aid the department has rendered other than handing over the money provided by the Treasury.—*Nov. 13.*

#### MR. BROUH SMYTH AND THE INDIAN GOLD MINES.

SIR.—You state in your remarks last week on this subject "that the absence of gold in payable quantities appears to be more apparent from each additional report received," and you therefore suggest "that Mr. Brough Smyth's reports were evidently fallacious, whether from incompetency or less excusable cause is not yet proved." I think the question of competency may be left out. Mr. B. Smyth is a recognised authority in the special work he undertook for the Indian Government. I would propose to discuss whether the results that have, so far, been received in any way justify your other charitable inference. Mr. B. Smyth appends to his report to Government on the Wynnaad gold fields a list of 137 assays of samples of quartz on which he based, to some extent, his opinion of the country. Of these assays 79 (more than one-half) give results of 5 dwt. per ton or less. Mr. Smyth's argument was, that gold was generally disseminated throughout the reef, that in some parts the proportion of gold is large, and that the formation of the country presents great facilities for prosecuting mining operations at the smallest cost. But he stated that the gold was most plentiful in those parts of the reefs that contain pyrites. In addition to the above-mentioned assays, Mr. B. Smyth based his opinion on the following actual crushings of quartz in the Alpha Mine, about which, however, he expressed himself satisfied "that it was impossible to save the gold by it." In 1876-7, 779 tons of quartz were crushed by the Alpha Company with an average result of 2 dwt. 9 grs. of gold for each ton crushed. In 1877 the Wynnaad Prospecting Company crushed 94 tons of quartz, with an average result of 3 dwt. 4 grs. of gold crushed; and in 1877-8 the Prince of Wales Company crushed 322 tons of quartz, from which an average result of 10 dwt. 12 grs. of gold per ton of stone crushed was obtained. These results are facts which, both as to the quantity of stone crushed and the quantity and value of the gold obtained, can be substantiated.

Now what are the reports since received on which you assume that there is an absence of gold in payable quantity? The South-East Wynnaad Company have, as far as I can gather, crushed in all about 500 tons of stone. The results of three separate clearings up have been stated at from 3 to 4½ dwt. of free gold to the ton crushed, together with about 12 per cent. of pyrites containing, by assay 5 ozs. to the ton, or say, when extracted, a further 12 dwt. of gold per ton of stone crushed—say in all 15 dwt.

From Rhodes Mill it is reported that 400 tons were crushed at their first clean up, giving about 1 dwt. per ton of free gold; but 50 tons, or 12 per cent. of pyrites, were saved, giving by assay 5 ozs. of gold per ton of pyrites, or say 12 dwt. per ton of stone crushed. Mr. Gitchell, the manager of Rhodes Mill, is now treating these pyrites in the Australian method, as recommended by Mr. Brough Smyth; and if this process is successful, and anything like the assay value obtained from the pyrites, the value of the Wynnaad reefs is established.

The Phoenix Company, as I understand, have crushed in all about 700 tons of quartz, good and bad, from which 90 ozs. of gold have been secured—say 2½ dwt. per ton besides pyrites, of which there is a large proportion—say 20 per cent.—which is assayed at 3 ozs. per ton. The only other published results of crushings are from the Indian Gold Mines Company of Glasgow, who have made several small trials at the old Alpha Mill.

Now this machinery has been very slightly improved since it was condemned by Mr. Brough Smyth, and it is admitted by Mr. Severn that the tables are defective. Certainly the results so far obtained are inferior to those above quoted, which were achieved by the inexpert planters. They were guided by the native miners in their treatment of the stone, and wasted the quartz in kilns before crushing. This doubtless prevented the proper separation and treatment.

of the pyrites, but it enabled a large quantity of free gold to be saved by amalgamation.

The present fall in gold mining shares seems to me due to the delay in the publication of results from the Glenrock mill, of which very much was expected. But in the absence of machinery for the treatment of pyrites the results coming from Glenrock are not likely to be of any immediate importance: 2 to 3 dwt. per ton of free gold will keep the mills going, and the profits will be made from the pyrites. Doubtless the output of gold will occasionally be much greater as runs or strikes of rich stone are discovered; and now that the Indian gold mines of Glasgow have their debris from the Rajah completed I expect that richer stone will be soon found. But as yet the mining work done in Wynnaad is of the most superficial character. The energies of the manager have for the most part been devoted to the erection of machinery, buildings, roads, and tramways, in order that some crushing results of surface stone might as soon as possible be obtained, to satisfy impatient directors and shareholders; but that any conclusion should be drawn from the little trials as yet made as to the poverty of the Wynnaad is as sensible as the idea that gold could be gathered for the picking, because Wynnaad is supposed to be the Biblical Ophir.—*Perry Hill, Nov. 15.* J. W. MINCHIN.

#### THE COLAR MINE.

SIR.—Looking to the supreme silence which reigns at this mine, though it began to crush last June, it is worth while recalling Mr Hay Anderson's opinion of its prospect expressed so far back as February last. In the Times of Feb. 6 Mr. Hay Anderson writes:—"I have received hundred weights of stone from one of the known auriferous reefs in the Colar Mysore district showing no gold visible. This I have had tested by actual working, not by laboratory or assay experiments, the result giving an average of nearly 1½ oz. to the ton, and in one case, where the Britten-Readwin's pans were used, nearly 3 ozs. to the ton. The stone in the latter case was tested in different lots of ½ cwt. each, and treated in precisely the same manner as if the weight had been tons." Mr. Anderson says further that "he has samples from a reef recently opened in the Colar Gold Mines Company's property containing gold visible to the naked eye, and which from my personal knowledge of the district and the reefs I consider to be a fair average specimen of the gold bearing quartz at a depth of from 70 to 100 ft." Mr. Hay Anderson is and was a director of this mine, besides being one of its "concessionaires." His opinion must, therefore, be regarded of considerable value unless it was given for a purpose.—*Madras, Oct. 24.* A SHAREHOLDER.

#### ST. JOHN DEL REY MINING COMPANY.

SIR.—I enclose a circular which I have issued to my co-proprietors calling on them to assent to the division of the company's stock into 12 shares, and thus prevent the excessive and alarming fluctuations of 20 to 30 per cent. which have recently occurred in the market price of the 100*l.* stock. I am happy to say that I have received a large number of replies assenting to the proposition, whilst only about half-a-dozen have so far dissented. I should be obliged if you would notice the circular in the Journal, and draw public attention to it as I find many proprietors have not received a copy of my circular, although one was posted for every person on the list I obtained from the company. I may add that the returns from the Morro Velho Mine are gradually improving, and that although there will be no dividend this Christmas, in consequence of the water having been in the mine during nearly the whole of the past half-year, there are unmistakable indications that the dividend in June next will be at from 10 to 20 per cent., and as the large water-wheel is expected to be at work this month there will be no fear of the deeper and richer portions of the lode being unworkable through water being in the mine again. JOHN SCHOFIELD.

*St. Stephen's Chambers, Telegraph-street, London, Nov. 16.*

#### CIRCULAR.

Owing to the great difficulty of negotiating a sale or purchase of the St. John del Rey Company's stock, and the large difference between the quoted buying and selling prices, which frequently result in a drop of 10 to 20 per cent. in a day, timid holders force their stock on a bad market and the public are deterred from investing in it; consequently the number of members of the Stock Exchange who deal in it is limited mostly to the few who are acquainted with the nature of the property, and have the courage to hold it. Such a state of things seriously depreciates the value of the stock, which recently went down to the absurdly low price of 142½ per cent. This great fall was undoubtedly the result of the quotation of the company's capital being in 100*l.* stock, instead of in small shares, like those of the Venezuelan and Indian gold mining companies, for which shares, although most of them have been in existence only three years, there is a large and free market, thousands of shares being bought and sold daily without producing any startling fluctuation in price; whilst the execution of an order to buy or sell 100*l.* St. John del Rey stock, frequently causes a depreciation or appreciation of 10 to 20 per cent. Hence many brokers disassociate themselves from investing in it, and were I a broker, unacquainted with the merits of the property, I should do the same. The only remedy for the evil is the division of the capital into shares of 12*l.* This division of the capital into 12 shares would not only induce a larger, more certain, and more facile market for buying and selling, but would also cause the price to advance more nearly to its intrinsic value, and in these views many of the most experienced members of the Stock Exchange concur. Under these circumstances several large holders of the stock have suggested that the feelings of the co-proprietors should be tested as to the desirability of dividing the stock, which amounts to only 253,000*l.*, in 253,000 shares of 12*l.* each; and I have consented to take action in the matter, and bring the proposition before the proprietors by means of this circular. The number of shares into which it is proposed to divide the capital, taking into account the extent of the company's mines, is not large in comparison, as those of several of the Venezuelan and Indian Gold Mining Companies are in larger numbers. For instance, the Chile Gold is in 500,000*l.*, the Potosi in 349,000*l.*, the Indian Consolidated in 400,000*l.*, and the Indian Glenrock in 240,000*l.* shares, whilst the capital of many others is in approximately large numbers. Some of these 12*l.* shares advanced to 4*l.* each, but I do not desire to see the Del Rey 12*l.* shares go up to 4*l.* unless the increased productiveness of the mines warrant it, but that they would immediately improve in value, and deservedly so, on the division of the capital into 12*l.* shares there is no room for doubt, whilst there appears to be no valid or substantial reason for opposing the division. I shall be obliged by an expression of your opinion as to the proposed division, and for that purpose enclose the accompanying form, which please fill up in the affirmative or negative, and return to me signed as early as possible, it being intended, if the feeling of the proprietors is found to favour the proposition, to present a requisition to the directors to call a meeting to determine whether or not the division shall be carried out.—(Signed)—JOHN SCHOFIELD.

#### THE NEW CALLAO (LIMITED).

SIR.—I was glad to see in the Journal of Nov. 4 a letter from the Chairman of the New Callao (Limited) intimating the probability of some points of the property being disposed of to other companies. There is no doubt that the property acquired by the New Callao shareholders is one mass of rich gold-bearing quartz, and it is estimated that from surface to a depth of 300 ft. there are millions of tons of quartz, all of which will pay for crushing. Mining experts of the famous Callao Mine, also of the Chile, Potosi, Nouveau Monde, &c., have been over the New Callao property, and they all pronounce it as a high-class gold field. I saw some of the quartz from the Pinelli lode in the New Callao property a week or two ago. The quartz was as white as snow, with no gold stains, or any indications of pyrites; in fact, it was a piece of quartz that looked beautiful as an ornament, but no one would say there was any gold in it. Yet this sort of quartz has been tested and found to contain gold in minute particles, with an average of 1½ oz. to the ton. I have also seen samples of another kind of quartz from the Rowbottom lode in the New Callao property. In this case the quartz was stained with spots of gold, showing here and there, and seamed with what I should say looked very like pyrites. This kind of quartz will give an average of 5 ozs. to 6 ozs. of gold to the ton.

The only fault I find with the New Callao property is that the mine is too large for one company to work. There are lodes enough on the mine for a dozen companies to work for the next 50 years. If the Pinelli or Rowbottom lodes were in New South Wales or in Victoria there would be half a dozen companies working upon each lode. As the Rowbottom lode is in the higher part of this property and some distance from the other 15 lodes discovered on New Callao cannot run on the Rowbottom be disposed of to other companies? My proposal is that the directors of New Callao call the shareholders together and submit a plan for a tributary company leasing part of the Rowbottom lode. Several shafts have been sunk on this lode, and the quartz is proved to be rich, and there is plenty of it, for the lode is 4 to 5 ft. wide. Say 200 ft. run on this lode be leased for a term of years to No. 2 company, the terms to be 5000*l.* cash, to be paid to the New Callao and one-half net profits made by No. 2 company to be handed over to the New Callao shareholders. The option could also be given to the shareholders in No. 2 company to pur-

chase their 200 ft. run any time within the lease upon payment of a certain sum—say, 20,000*l.*

The plan I now propose is similar to what has been carried out by the Organos and the Orita Gold Companies. It is more popular with investors than the old-fashioned way of having a big capital and paying 50,000*l.* or 100,000*l.* for a property. The high premiums at which Organos and Orita shares stand are proofs of this. The capital for No. 2 company for working part of the Rowbottom lode need not be more than 20,000*l.*, and this would leave 15,000*l.* as working capital. The 5000*l.* handed over to the New Callao Company could be expended in erecting a quartz mill near Pinelli lode, and this mill could be used by both companies, for a tramway of 100 yards from the Rowbottom lode would run up alongside the mill site. I feel confident that if this No. 2 company be formed there would arise a demand for other parts of the New Callao estate. Will any of the other shareholders communicate their views in your columns?

Barnstaple, Nov. 14.

J. B. J.

#### THE NEW CALLAO.

SIR.—After the quotations I have given from Mr. Skerthly's report, showing, if words have any meaning at all, that we claimed to be in a different locality and in a different mountain range to El Callao, and much nearer Bolivar, I may safely leave "W. H. P.'s" bare assertion to the contrary to the common sense of your readers. The Chairman, in his reply to "N. N.", has already stated that the decision of the board with regard to the 750 acres was taken with the concurrence of many of our most influential shareholders, and I venture to think that the directors have better opportunities than "W. H. P." of ascertaining the opinions of our members.

With respect to the 500*l.* in shares which we receive from the West Callao, no shareholder except "W. H. P." has yet complained to us of its being an inadequate payment for leave to reprint reports which have already served our purpose.

F. J. WARNER, Sec.

*Bishopsgate-street, Nov. 15.*

#### CEDAR CREEK GOLD MINES COMPANY.

SIR.—In reference to the reports of a proposed resuscitation of the Cedar Creek Gold Mines and Water Company, I agree with a correspondent whose letter appeared in the *Mining Journal* of three weeks ago, that a meeting of the shareholders should be called. Surely there is some gentleman in the City of London who is largely interested in Cedar Creek shares, and would it not be possible for him to call a meeting at his office? It appears that a short time since Mr. Hickey, of San Francisco, who is interested in the Cedar Creek Mines, made a certain offer to the trustees of the debenture holders with the view to resuming operations at the mines; but I have not learnt whether such offer was made known by circular or otherwise to the shareholders.

As Cedar Creek possesses splendid water power, would it not be possible to get some adjoining placer mine to join with the Cedar Creek shareholders and work the whole as one concern? In this way there would be every probability of some of the new capital being subscribed for in America. I shall be glad to hear through your columns if some of the shareholders cannot take up the matter of resuscitation.—*Barnetapple, Nov. 14.*

J. B. A.

#### MOONTA MINES, AND ROCK-DRILLS.

SIR.—The twenty-first annual meeting of shareholders in the Moonta Mines was held at Adelaide on Sept. 25 when a dividend of 10*l.* per share (16,000*l.*) was declared, payable on Oct. 17. The profits for the half-year ending August was 22,623*l.* 17s. The average produce of the ore sold was 19 per cent. The number of tons of ore raised was 9494 tons 12 cwt. The working expenses was 66,038*l.* 8s. 7d., exceeding 11,000*l.* a month. The number of hands employed was 120*l.* In reference to machine drilling the manager, Mr. Hancock, states in his report—The Darlington drill has been employed during the half-year in driving the 180, 200, and 220 fm. levels at Taylor's shaft. In each place the rock has been very hard, and would have been much objected to by the miners had they to do the work by hand labour, moreover this would have employed three times the number of men to execute it by that method. The machinery is exceedingly valuable in working hard rock, especially when quick dispatch is required.

X.

#### MINING IN SOUTH AUSTRALIA.

SIR.—Since my last communication gold mining in this colony has been very unsuccessful, and speculators having lost, in many cases, all they had invested, several of the mines have been closed on account of the difficulty experienced in collecting the calls. It has been a matter of surprise how quartz in which gold could be plainly seen should when crushed in large quantities give the miserable return of only 2 or 3 dwt. of gold per ton of stone. It has long been my opinion, in common with that of other persons of experience in the treatment of auriferous quartz, that the greater portion of the gold was lost in the very process intended to save it. On some occasions the loss of a certain proportion has been proved, and lately a report has been received from England, on 89 lbs. of quartz a fair average sample of which gave on assay a return equal to 2 ozs. 13 dwt. of gold to the ton of stone; 27 lbs. of it were then subjected to the ordinary process of mechanical amalgamation, when only 12 dwt. per ton were obtained; the remaining 62 lbs. were then treated by a new patent electro-amalgamator, when 2 ozs. 1 dwt. of gold to the ton was saved. We are anxiously hoping that this or some other process as good or better for saving the gold may be introduced here. But though gold mining is suffering from a partial collapse, silver-lead mining and copper also seem likely to revive again shortly. The price of the latter is still low, but its steady rise for the past three months is encouraging, and we have mines that can be made to pay with copper at 74*l.* per ton. The old Kapunda Mine is turning out some very rich ore, which is being raised on tribute by only a few miners, but they as well as the proprietors of the mine are making more than good wages at it. A considerable quantity of the ore recently raised is from new ground, and the average produce has been from about 33 to 38 per cent. of copper. But of all the copper lodes I have seen during my 20 years' experience amongst the mines of the colony, that which was mentioned in a former letter surpasses everything. Rich ore is found over a large extent of country, and here the deposit is almost continuous for a length of seven or eight miles. I may say that I walked "right on end" along the lode for a distance of four and a half miles, and it is supposed to be the same lode which I picked up again about three miles further south. Wherever it has been opened it appears to be several feet in width, not less than five, and oftener more. A shaft has been sunk 50 ft. through ore, no walls being cut until a depth of 40 ft. was reached. At about 27 ft. down a splendid course of green carbonate, or rather chloride, and rich gossan was cut, and drives are now being extended on it north and south from the shaft at the 7 fm. level. Here the lode is 10 ft. wide, and the ore as raised is worth over 30 per cent. of copper. It has

splendid show of ore so near the surface, and if it holds down, as there is at present every appearance that it will, the Willouran Mine may eventually rival the great Moonta itself. The cost of raising the ore, cartage to the railway (25 miles), railway carriage, &c. to Port Augusta, can be all covered by 4*l.* per ton, and under favourable circumstances it can be sent to England for 1*l.* a ton freight. Large quantities might be shipped to average 30 per cent. of copper, and nothing under 25 need be sent away for a long time to come.

In the same district, but about 30 miles further west, other lodes have been discovered of great extent and richness, solid grey oxides of 50 per cent., with rich green carbonates and red oxide, the latter probably 75 per cent. These are new discoveries. The spirit of mining enterprise having been greatly stimulated recently by the facilities afforded by the new railway tariff of charges, which enables ore to be conveyed 200 miles at a cost of about 1*l.* 2*s.* 6*d.* per ton.

Work at the Blinman Mine is being pushed forward with energy. The neighbouring Wheal Friendship also promises to turn out very good. Other mines are being worked by the Corporation of South Australian Copper Mines with very encouraging prospects. Mr. Masey, the resident director of the corporation, is most energetic, and is determined to do all in his power for the interests of the company. I am very pleased to say that the Mount Rose Mine, of which I have always held a very high opinion is proving itself both rich and productive. At the 15 fm. level a splendid course of steel grey ore of 50 per cent. of copper (by assay) has been cut, and though at present only 6 in. or 8 in. thick, it is embedded in "country" so strongly impregnated with black ore that it has assayed as high as 66*1*/<sub>2</sub> per cent. of copper. There is a very considerable width of this ore bearing country, and the Wheal Rose may now be considered as a thoroughly established and paying property. Its future value will probably prove to be something enormous.

J. B. AUSTIN.  
Adelaide, Sept. 23.

#### MINING IN NEW SOUTH WALES.

SIR.—Mining matters with us are not specially brisk, but are nevertheless steadily progressing, and are slowly growing into a more settled industry, and fresh discoveries of minerals are frequently being made in newly opened districts, whilst the real value of many of our blended ores (hitherto pitched on one side) is now also becoming known, principally through the extraordinary sale returns from London of the shipments of pyrites from the Reform Company, Lucknow (Wentworth Freehold) near Orange, as the sudden jump up in value of this claim from 30,000*l.* to 60,000*l.* set other mine owners to also try and ascertain the value (if any) of their neglected pyrites lodes, and although nothing has yet been discovered in any way approaching the value of the Wentworth pyrites, still several other lodes have shown on assay from 2 ozs. to 10 ozs. and 12 ozs. per ton, and are therefore pretty sure to be re-worked now that there is a known market and a certain price for them.

Amongst others, Guy's Moraya Silver Mine is an instance. This was opened 20 years ago or more by some Sydney merchants. The arsenical pyrites was then thought to be silver, (and as the lode was half metal—of course of enormous value) 30,000*l.* was spent on the 80 acres, and 400 or 500 tons of ore raised, when they found "all is not silver that shines," and that in the then ignorance of how to treat pyrites in England even that it barely paid to ship home, they grew discouraged, abandoned the mine, and sold it all off to a saw-mill proprietor, who gave 150*l.* for it, just for the boiler and engine for his mill. He, however, kept the property, and last week was offered from 10*l.* to 15*l.* per ton for all the old ore at grass (for the gold in it principally) and as the lode is large and strong, and the shaft only wants pumping out to begin work again at once, he may now look on his "pile" as pretty well made for him.

The two following telegrams (just down) referring to gold and tin may interest some of your readers, especially the "Cornish ones," as every month almost goes to prove the large extent of our tin-bearing county. Mr. P. J. Crane, of Vegetable Creek, telegraphs as follows:—"A lode 2 ft. wide of pure tin was opened out to-day in Otterie, Reid, and party's claim at Tent Hill. Lumps of tin 80 lbs. in weight were found loose under the surface." "Splendid specimens were yesterday brought to Orange from the Industry Vein in the New Reform Company, Lucknow."

The Wentworth Gold Mines yielded 6 tons free gold from the shallow levels in about two years; but the following account of a mine in Kelvin shows that all the rich yields are not confined to New South Wales:—"The famous Garden Gully United Mine, Sandhurst, has declared its two hundredth dividend. The total profits distributed by this company reach the large sum of 780,000*l.* The product of this mine for the last 12 years is 12 tons of gold, and its prospects are still flourishing. During the last six years operations have been chiefly confined to the 668 ft. and 745 ft. levels, where there is still an immense body of quartz to be worked, which is estimated to keep the batteries employed for another six years. The total of the Sandhurst yields for the past week was 7500 ozs."

There has lately been discovered a new method of coating the copper for saving gold at the crushing bottoms, which promises to be very valuable if it really stands the test of continuous practice. It has so recently come out that it is premature to offer any decided opinion on its merits; but should it stand the test of trial then it may also be of importance to your Indian gold mines, especially those where the gold is fine. I enclose you a statement of it for reference should any of your readers wish to know the details.

R. D. A.

PATENT COMBINATION ELECTRO-COPPER AND SILVER PLATES.—By the use of these from 25 to 100 per cent. is added to the value of any quartz gold mine; from 10 to 25 per cent. is added to sluicing mines, and 10 per cent. to wash-dirt passed through a puddling machine. The wonderful results obtained by these plates and the great superiority over the ordinary copper-plates in general use must be seen to be understood. Crushing machine owners and managers will in most cases say they are not losing any gold, therefore it is unnecessary to add improvements for saving at a machine where nothing is lost, but the following trials go to show what a mistaken notion it is, and what tremendous losses are made every day. The first trial of the combination plate took place at St. Arnaud, Victoria. The stone was poor, averaging from 1 to 2 dwt. per ton. One of our plates, measuring 4 ft. 10 in. by 19 in., was put down to receive the discharge from five heads of stamps, the next five heads had the same size plate in good order, ordinary kind, the quantity of stone to be crushed was 150 tons; the gold was coarse so very little was expected on the plates, as most of it had been found remaining in the box after previous crushings. The result was 21 ozs. of amalgam from the combination plate and only 1*1*/<sub>2</sub> oz. from the ordinary copper plates on the next table. The total amount of amalgam from the two boxes and all the plates was 46 ozs., 44 per cent. of which was saved by our plate. Several other trials at the same machine resulted in like advantages. We then made a trial against what is admitted to be the best copper table in Victoria, at Stawell. Our plate was 4 ft. 10 in. by 13 in., taking the discharge from five stamps, against a similar discharge from the next box with copper plates 4 ft. 10 in. by 2 ft., or double the area; the time was 30 hours. Our plate saved 5*1*/<sub>2</sub> ozs. of amalgam, against 1*1*/<sub>2</sub> ozs. of the other, or 700 per cent. more when the area is taken into consideration. We do not mean to say that all this gold is lost, some of it is afterwards caught on the blankets and concentrators. In this colony (New South Wales) two electro-plates were put on trial at the Brown's Creek Gold Mining Company's machine, near Blayney. At this place the old plates have been working for years, they are therefore well coated, and in good order for catching gold. The following was the result:—From two combination electro-plates 190 ozs. of amalgam were taken, and from the two ordinary plates at the next box 84 ozs., or 120 per cent. in favour of our plates; this will make an additional profit to the company of more than 2000*l.* a year. A trial has also been made at the Junction Reef Gold Mining Company's battery, the result of which is simply marvellous when compared with the ordinary copper plates at the next table, but it is only fair to state that the latter plates were now and not in good condition for saving gold. The reason why these combination plates act in such an extraordinarily successful manner is simply because the copper and silver by this new process are as two plates in one, and are made to form a strong galvanic battery with the addition of quicksilver. The chemical action that takes place is plainly visible whenever the mercury is put on the plates in the usual way for amalgamation. It will be seen that instead of the mercury running off in globules as it does off ordinary copper plates, it, under the influence of the chemical action already described, becomes agitated, spreading all over the plate in a thin film, presenting a disturbed porous surface when examined with the glass, the effect of which is to attract the very finest particles of what is known as float gold, and which in all ordinary cases pass over copper plates. Gold that is so fine that it cannot be seen in a dish by the most careful washer is secured by these combination plates. We guarantee our combination plates to have a thickness of not less than 2 ozs. of pure silver to every square foot of copper, in addition to other necessary special metals. A very important change may be brought about by the use of these plates—the tables may be secured by lock and key, and only opened when a director of a company chooses to visit a mine. It is impossible to do this with ordinary copper plates, because the oxide of copper which is always rising to the surface must be removed if it were not no gold would be saved. The combination plates are always in order, not requiring any attention from the man in charge of the battery. It must be understood that these plates are manufactured by a patent process, differing

entirely from what is known as electro-plating, the process in use for ordinary electro-plating, although causing the plate to have nearly the same appearance as our plates, has an entirely different effect when put to gold amalgamation. The discovery made by the inventor of this process is specially worked out for amalgamating purposes. No matter what amount of silver is put on by the old electro process, without the special mixture of metal embraced in this patent, the same chemical effect cannot be brought about. Companies and mineowners can be supplied with a complete set of combination plates and tables for crushing machines, or a complete set of combination plates and boxes for sluicing claims on reasonable terms. Models to be seen at the office. Our terms for plating are 2*s.* per square foot, purchasers providing copper plates of any thickness; we have found the best thickness to be 1*6* gauge, costing 3*s.* 6*d.* per foot. A sample plate is on view at the office of Palmer, Thompson, and Denny, Pitt-street, Sydney.

#### LEAD REPORT.

SIR.—Since our last the market was a shade better, but only for a day or so. Spanish and rich silver-lead was sold at 14*l.* per ton, and ordinary silver-lead for 13*l.* 1*s.*, and it leaves off dead flat with a tendency to fall lower as the shipping season is nearly over, and the manufacturers are only poorly stocked with orders. The last Greek lead sold at 14*l.* 2*s.* 6*d.* for 600 tons, and the Newcastle offers for this lead were considerably under this price, it being taken by London refiners.—*Newcastle-on-Tyne, Nov. 16.*

#### STOCKS.

#### THE WELSH TIN-PLATE TRADE.

SIR.—The aspect of the tin-plate trade throughout the country has for a long time past been so thoroughly depressed and disheartening that profound and perpetual anxiety as to the condition of affairs has become universal amongst all those connected with this once flourishing industry. Without professing to discount the future, it may be useful to briefly glance at a few plain and relevant facts and figures collected from authentic and authoritative sources. The great metropolis of the trade is, of course, South Wales, and more particularly the counties of Glamorgan and Carmarthen. There tin-plate tradition still lingers in all their pristine glory, and makers and men still recall with pardonable pride the not so far distant era when a box of tin commanded a ready sale on an active market at 28*l.*, instead of the present almost bankrupt figure of 15*l.* This last quotation cannot, and, as a matter of fact, does not say makers. What has brought about this wretched state of things? The answer, in part, has been given again and again—over-stocking of the market. With injudicious haste, a few years ago, a large number of new works were opened, and the output increased to an extent which was utterly out of reason. Owners of stock ruled the market, and the Liverpool buyers, and in a lesser degree the London and other buyers, made hay whilst the sun shone for them. The buyers were, from a commercial standpoint, not at all to blame; they merely took justifiable advantage of an extraordinary influx of material. The sequel need scarcely be repeated. In many cases there were rapid financial collapses, in others those who had invested their all in the trade had to keep on making at a positive loss; a minimum of capitalists, of substantial means, closed months since, awaiting the advent of those better times so long predicted and so long coming. Where the tin-plate manufacturer has been allied to other industrial enterprise, manufacturers have managed, with a measure of success, to make both ends meet; but these instances are few and far between. There are now dozens of tin-plate works unhappy idle. Another material contributory cause to the current deterioration has been the long credit system, the embarrassments which have resulted from this latest modern phase of fraudulent finessing are well-nigh numberless. Then, again, the cantankerous and muddlesome meddling of professional agitators has not improved makers, indeed it has operated very banefully. Agitation, indiscriminate and consequential, is less warrantable in the tin-plate than any other business almost, the coal trade for example. In the coal trade the market value of the crude ton of coal is positively known, but this is next to an impossibility in the tin trade owing to the variety and expensiveness of the articles which it is requisite to purchase for the manufacture of the box of tin, and what can be more suicidal to all concerned than to find men fanning the flame of discord amongst the employers and employed, and insisting upon this and that advance of rates, which, by precipitating a crisis, open the doors of the bankruptcy court to the master, and bring the man and his family to the ugly portals of the workhouse. These are hard and bitter realities, and it is certainly no pleasant task to recount them; but *amicus Plato, amicus Socrates, sed magis amica veritas.* Few persons in English speaking circles have any conception of the violent obstructive and revolutionary tactics to which resort has been had in the Welsh vernacular newspapers by persons who there pose in the dignified garb of the tin-plate worker—guide, philosopher, and friend. Employers or managers have been boycotted in words reeking with deliberate insult and seething with personalities; falling as these did upon willing ears and prejudiced minds the sequel need not be told. It is no tension of truth to say that these compositions have been prolific of incalculable mischief and harmfulness. In justice, however, it should be added (and we are pleased to record the circumstance) a milder temper has of late pervaded this unsavoury literary arena; the pity is that a different spirit should have at all prevailed. So much for the past, and now for the present. Effect has been given for weeks to the policy of restriction of make, unanimous resolutions of manufacturers and men. Those who held aloft are now pretty generally convinced of the wisdom of the method of procedure then drafted out. Stocks are being considerably reduced, and the make is under the demand. At the recent meeting of tin-plate manufacturers, at Birmingham, it transpired that the demand for tin-plates was increasing from the United States, and it was stated with force that if works now idle will not repeat former folly, and lessen the tenacity of the market by once again inundating it, the demand will soon be very far in advance of the supply—30,000 or 40,000 boxes it is roughly estimated. Makers could hardly credit the statement that 11 additional mills, distributed over six or more works, were about to be started to produce over 250,000 more boxes per annum. Repletion must be followed by depletion, and the golden mean is in the tin-plate, as in every other trade, the true secret of success. The bulk of the employers see this, and by their actions prove that they have not learnt the lesson in vain, and were it only on this ground there is hope for a speedy trade revival. But there is another cause for favourable anticipation; the long credit system has been almost abandoned, this pernicious element has rapidly been largely eliminated. The market is healthier to a proportionate degree—greater confidence and security is felt in its dealings. The workmen too are in greater harmony with the employers, the one body is as anxious as the other to restore the trade equilibrium. Above all the demand for tin-plate is increasing, and not decreasing. There are some who are apprehensive of American competition—a delusive chimera which a Welsh workman's advocate explored the other day with the conclusive proof that we could produce plates in the American market at 4*s.* 8*d.* per box less than the cost of home production. The same conspicuous personage continued, and the remarks are worth citing though not directly relevant in this connection:—The tin-plate trade is a British industry, and no other country can compete with our manufacturers. The number of works in the first place (1800) was nine; in the next 25 years 14 were added, and in the next few years there was an increase of eight. In 1845, six more were built; between 1860 and 1865, seven more were added, and from 1865 to 1870, 16 more still. Now there are 100 works registered, out of which 13 (?) are idle. The works in England alone can produce 7,250,000 per annum, while the whole of the works on the Continent only produce 500,000. The absurdity of giving this trade to America having been pointed out, further reference was made to production, and the general official returns of make dwelt upon:—1862, 1,001,437; 1863, 1,115,927; 1864, 1,003,569; 1865, 1,254,367; 1866, 1,419,573; 1867, 1,579,672; 1868, 1,768,128; 1869, 1,934,034; 1870, 2,001,575; 1871, 2,392,100; 1872, 2,361,660; 1873, 2,409,360; 1874, 2,459,200; 1875, 2,767,260; 1876, 2,647,940; 1877, 3,064,520; 1878, 3,101,420; 1879, 3,955,930; 1880, 4,354,360; 1881, 4,848,960. It is said that our exports for 1882 will amount to 5,250,000. The statistics with regard to stocks are:—March, 1881, 326,734; March, 1882, 316,566; July, 1880, 298,132; July, 1881, 288,479; July, 1882, 339,987; August, 1880, 297,047; August, 1881, 260,560; August, 1882, 256,098; October, 1880, 290,136; October, 1881, 253,266; October, 1882, 256,237; November, 1880, 307,925; November, 1881, 233,239. It was inferred

by the calculator that to meet requirements the stock should be fixed at 200,000. From this reproduction it will be seen that the line of argument adopted is one of fact or fallacy; the representatives of the men are at last beginning to think as well as talk, and there is always some hope of intellectual salvation when once even this slight elevation has been reached. Without diverging into side issues it may be safely asserted that there is greater promise of vigour apparent in the tin-plate trade now than there has been. Some makers are going in for manufacturing untinned plates, and thus save the expensive process of tinning; this relieves the pressure upon the market. A few eminent firms are also applying novel processes of manufacture, and produce special brands in which there is very little competition—another lightening element. And it may be remarked broadly and generally that if makers co-operate to restrict the output yet awhile, and exercise an ordinary measure of discretion there will be no chance of a recurrence of the Melen-Griffith works episode—a concern being carried on for 30 years at a loss. There is some conversation about having a whole week's restriction to further aid in re-establishing the trade, but it should not be forgotten that extreme measures are oftentimes synonymous for extreme evils.

#### READER.

#### GLEANINGS FROM GERMAN AUTHORS—ON LODES—I.

SIR.—The following "gleanings" aim at giving the sense and chief points of the author rather than a literal translation:—

Lodes are plane bodies which traverse rock formations, but which were not formed at the same time, but at a later period than those formations.

The difference between lodes and beds consists in the dissimilarity of their formation or of their age. A bed is also a plane body, but it is interstratified, and of the same age as the enclosing strata. A lode, however, whether occurring in stratified or unstratified rocks is always younger than the strata it traverses, because later formed. In many cases lodes have been formed by the occurrence of fissures which have subsequently been filled up. It may indeed be said that in most cases mineral veins have been found in this way. According to the filling matter they are termed dykes or lodes. Dykes are filled with rocks which have no particular value as basalt, trachyte, greenstone, porphyry, and granite, which as is known in many cases have come in a molten state from the interior of the earth. They vary in size from the thickness of the finger to many hundreds of metres. Lodes consist of quartz, calc spar, fluor spar, heavy spar (barites), felspar, &c., and when they contain one or more ores they are known as ore lodes, which, as the repositories of useful minerals, are to the miner of the greatest importance. Like beds, lodes have a strike and a dip (underlie). Their length is often considerable; some are known many miles long; their depth is in most cases unknown. The coming out of the vein at surface is termed its outcrop. The rock overlying the lode is called the hanging-wall, the underlying rock the footwall. The size is the vertical distance between the two walls. The underlie is various, and sometimes the vein is perpendicular to the horizon, in which case it cannot be determined which is the hanging or which the footwall. Lodes have, however, more frequently a considerable than a small underlie. As lodes are crevices or fissures subsequently filled up, so the fissures have their peculiarities. Generally besides the main fissure subordinate ones are found to branch off from it, and these also are afterwards filled up; they are known as feeders or branches. All lodes have such feeders, and contain angular pieces of the country rock, a feature never observable in beds. Lodes have a varying size depending upon the original width of the fissure. When the fissure is formed one side often slides along the other, mostly the hanging upon the footwall, resulting in the sides being polished or rubbed smooth, and sometimes striated; these appearances are termed slickensides. A lode may come to an end by wedging out, as when it dwindles down smaller and smaller until it becomes a mere division in the rock, or after being nipped it may again open out and continue its course. Lodes, like beds, may be cut off and displaced by heaves or slides; the extent of the heave or displacement may be very small or very considerable. Fissures occur most readily where the rock is most yielding or most easily ruptured; many stratified rocks rupture most readily in their plane of bedding, and in such cases the lode is found parallel with the strata. It is then called a flat vein (Lager Gang—bed lode).

That such deposits are true fissure veins is evidenced by the fact that they sometimes cut across the strata, that they have feeders or branches, and that they contain angular fragments of the rock traversed. I reserve for another letter some notes on the characteristics of ore-bearing lodes.—*Priltheli, Nov. 15.*

J. G.

#### GOLD IN NORWAY

SIR.—On the Island of Bommel, 20 English miles north of Hangesund, Mr. Reitain, the chief of the telegraph department of that town, has found a very rich deposit of gold, the samples which have just been assayed producing from 300 to 1000 ozs. per ton of vein stuff. Mr. Reitain is now arranging with some gentlemen in Arendal to introduce it to English capitalists. Captain Daw's eldest son, who resides near Arendal, has visited the island, and as he is a gentleman in whom unlimited confidence can be placed, perhaps, if not asking too much, he will favour the readers of the *Mining Journal* with a description of the island, nature of vein, predominating rock, &c. I have been here (Norway) nearly two months, and had I time would visit the island. I note that over 90 per cent. of the mines now working in Norway are paying dividends, and that Arendal as well as Dronning-Koll Silver Mines are to be re-started, both of which will be found second to none in the country. R. M.

#### NORWAY COPPER MINES COMPANY.

SIR.—The shareholders of the above copper mines will shortly be circularised to meet the directors to hear an account of their stewardship. I regret that distance will prevent me from being present; but I would counsel my co-shareholders who have it in their power to meet the directors to go forward and be on their guard, as I have no doubt they will, for I venture to predict that the statements prepared will be couched up in a very glowing and hopeful character. I was induced to become a shareholder from the manner in which the objects of the company were set forth in the newspapers; but have since taken alarm from correspondence had with the first secretary (Mr. Mould, where is he?) and the present secretary, which caused me to scrutinise the prospectus more closely. It is now 18 months since it was launched, by which time it was considered the mines would be fully developed, and that 400 tons of ore could be shipped per month, for inasmuch as paying ground was already reached and valuable ore being daily raised and immediate profits realised

fore another call is made, failing which let us have a full and satisfactory explanation of the position and prospects of the company.  
Glasgow, Nov.

A. G. C.

## THE TREVITHICK MEMORIAL.

SIR.—It has been suggested that a Memorial Hall, at Falmouth, adjoining as near the present Polytechnic Hall, in which machinery might be exhibited, would be a fitting monument to Trevithick, who certainly did much in introducing the locomotive. This seems specially desirable, as it is generally admitted that the Royal Cornwall Polytechnic Society has done more in encouraging mechanical inventions than any other existing institution. James Watt's profile has been, and is still, handed to successful exhibitors on one side of the Polytechnic medal, and Trevithick's memory might be perpetuated by a Memorial Hall in connection with the existing Polytechnic Hall. Surely enough money would be subscribed.  
C.

Redruth, Nov. 16.

## THE NORTH WINGFIELD COLLERY COMPANY.

SIR.—The North Wingfield Collery Company has been in existence for a number of years. It paid dividends for a short time after it started, but it has ceased to do so for the last five or six years. The colliery, I believe, has been during all these years of no dividends and is still a going concern. Balance-sheets are issued from time to time showing the company is working at a profit, but unfortunately none of it comes to the shareholders. A few months ago this colliery was figuring in some of the law courts, but how the suit originated, by whose authority it was instituted and carried on, and the case was disposed of, I as one interested never heard. No circular was issued so far as I know to explain the matter, and it was only by the merest accident that I heard of it at all. Surely if the shareholders do not get dividends they ought at least to get some information about an affair of this kind. The shareholders supply the capital upon which the company are trading, and ought in my opinion to be kept informed of all that concerns the colliery, whether prosperous or adverse, and more especially the latter. It will confer a favour if some of your readers will supply answers to the following queries in reference to the colliery:—How did the late law suit originate? By whose authority was it taken to the law courts? For what purpose was it taken to court? How was it settled? Why were the shareholders not consulted in the matter, and why have they not been informed of the decision of the court?

ENQUIRER.

Nov. 13.

## SHROPSHIRE LEAD MINING DISTRICT.

SIR.—We are all pleased that the Tankerville Great Consols Mines are improving so grandly, and that the preference shares are being so freely taken up by the shareholders. The way they have gone to work with these mines since Messrs. Peter Watson and Co. have taken them in hand is just the style we have long desired to see, and thus with good mines, and a good company, and good and energetic management we may reasonably expect success. We hear that there is 2 ft. wide of solid ore in the breast of the 80 fm. level west at Pennerley this week, and that that portion of their property looks well. We feel confident there is a great future before this company, and hope they will realise a better price for lead ore soon; with less lead being raised and more used we should get better prices. We hope the East Roman Gravels Company will take the course that all the miners here wish to see them take—i.e., open up the old Wood part of the mine—for the Wood lode is one of the finest, and has been one of the richest in the district.  
MINER.

## WALKHAM UNITED.

SIR.—Noticing the remarks made in the two letters inserted in the Journal relative to the above company, may I ask the favour through the same medium if the directors will kindly call the shareholders together for the purpose of arranging for further capital to be prescribed to develop the mines, which there is every reason to believe are worthy of the same. It seems to me monstrous now the new machinery which has been purchased and erected should be allowed to get dilapidated, and go to ruin for the want of a few hundred pounds to put the mine in a paying and dividend state.  
Nov. 16.

A SHAREHOLDER.

WEAL CREBOR, AND THE RIGHTS OF SHAREHOLDERS.

SIR.—At the general meeting of the shareholders of this mine held last Friday, the question of the open inspection of the mine was brought before the adventurers, when the resolution, limiting the inspection to once a fortnight, was rescinded by a large majority of the shares, represented by gentlemen present. Please allow me to point out the advantages which will accrue to the mine by the adventurers having the right to inspect their property at pleasure. In the first place, it might be inconvenient or even impossible to visit the mine on any specified day, and the object of further and new investments consequently frustrated, thereby causing the loss of fresh capital for want of the opportunity at the proper moment to inspect the mine. Secondly, the general shareholders would be in a position to know of any changes in the condition of the mine, and which is most important they should know. For instance, the mine might indicate improvements of paramount importance, and these being known only to an exceptional few, the possibility is that some shareholders might be induced to sell their interests just at the moment when the shares would be getting more valuable. This has too often occurred, and consequently mining enterprises, as well as individuals, have greatly suffered. Thirdly, the custom is entirely against any restricted inspection.

It is the experience of respectable mine agents that great benefit results to mines from inspections and consultations on such occasions. "In the multitude of counsel there is wisdom." The resident agent will find it to his own interest to give even extra attention to his duties, knowing that at any day the mine may be visited by adventurers or their agents, whereas a fortnightly inspection might not have the same effect. It is a delusion to say that the workings of the mine are interrupted by inspections; under ordinary circumstances the time occupied at any one point by the inspecting agent would not, on an average, be over a minute or two, and this would not result in the loss of one iota of work to the operator at the end of the day. The *bona fide* outside adventurer may congratulate himself that the restriction is removed.—*City, Nov. 16.* FREEDOM.

## WHEAL BASSET—VERTICAL SHAFTS.

SIR.—As a shareholder in the above mine allow me to congratulate my fellow shareholders on having a management that appreciates what is best for the speedy development of the mine. That 413 fathoms of cross-cuts and levels have been opened in 2½ years is most remarkable and praiseworthy. The great contributory to this has been the vertical shaft. To have sunk the shaft on the course of the lode to the present depth would have taken seven years. The extra cost of coal to pump the water during that time would have been far more than the whole cost of driving the 220 fathoms of cross-cuts, to say nothing about the saving of time and consequently cost. An incline shaft is a perpetual waste of time and money. To draw a ton of stuff from the 112 fathom level at Wheal Basset through a vertical shaft does not take half the time it would on the underlay of double the distance. To sink 10 fathoms vertical gives 18 fathoms of backs on the flat lode, which to sink would take 15 months instead of five months. Cornish mines suffer from nothing more than the want of good shafts; yet there are those who recommend sinking on the course of a lode ever varying, hence the wretched shafts existing everywhere. Practicals who recommend such can have no confidence in their own mineral knowledge or judgment. At the present rate of sinking of Lyle's shaft in three years Wheal Basset will be the deepest mine in Cornwall on the course of the lode—over 400 fathoms—not the work of generations, but half of it in less than six years. If any investor in mines be curious to know what the effect will be let him calculate two ends driving in each level at the rate of 6 fathoms each, say 12 fathoms in a lode averaging 3 fathoms wide, say 45 tons per fathom for the width, 45 × 12 × 18 = 9720 tons per month in each level. As four levels, or eight ends, will soon be driving with Darlington's

drills the discoveries or opening of tin ground will be at the rate of 38,880 tons per month, a fact unparalleled in metal mining. Talk of underlay shafts, vertical shafts 12 or 15 ft. square with carriages to draw 6 or 8 tons at a time are far more like the requirements of our mines.

If Capt. Trevena had a spare hour or two to take out the costs of driving the cross-cuts and levels, also the cost of the boring machines from the beginning, also the estimated cost to sink 100 fms. on the flat lode in labour, pumping, &c., he would throw a great light on mine development.

It is not every mine where cross-cuts are so long at the respective levels, but here is an instance of the unquestionable gain. In mines where the lodes do not incline so much the advantages are great. Take East Pool, for instance, where all their tinstuff is drawn through one shaft. Where would they be were their shaft on the incline—first south and then north following the great lode. The whole thing is so palpable that one is inclined to think it an ancient legend that Capt. Light in a benighted age read a paper to experts to convince them that to draw in a straight line and get the greatest amount at least cost of money and time was by vertical shafts.

City, Nov. 15.

H. W.

## EAST DEVON CONSOLS COPPER MINE.

SIR.—When I was in this neighbourhood last the miners were driving an adit level under a rising hill, where they had a fine run of grey ground nearly 40 fms. in length, and as they gained in depth the lode greatly improved. This week I visited the district again, when I took a turn through the mine, and was pleased to find the men at work sinking the engine-shaft, which Captain Browning, the manager, strongly recommended 18 months ago. The directors will, in my opinion, do well by adhering to this recommendation, by sinking to deeper levels with all possible speed. I am led to believe by the time the 50 is reached a most valuable mine will be opened up. I saw some splendid looking stuff for making ore both east and west of the present workings, very similar to that raised in the adjoining mine, South Devon United. It is well known by all practical miners that what is wanted at East Devon Consols is a spirited development in depth. When this is done there cannot be two opinions as to what the result will be. The company cannot, in my opinion, fail to establish itself as a great success.

A SUBSCRIBER.

Buckfastleigh, Nov. 14.

## NORTH COAST OF CORNWALL—PENTIRE GLAZE MINE.

SIR.—I noticed Mr. Pascoe's letter referring to this mine a fortnight since, but was at a loss to comprehend what part of the property it was intended to describe. Mr. Paynter's letter in last Saturday's Journal throws some light on the matter, and I infer from it they are working on the South Hill part. If they have the whole of the property as formerly held they may congratulate themselves on having one of great value, for when we suspended operations it was not at all from poverty of the lodes, as we made a handsome profit from the last six months underground workings, although at the time hampered by the harpies of the law, let loose upon the property through a lawsuit between the only two proprietors.

No work was done after we left the mine in 1854, except to remove the plant and machinery, and to make the property a complete wreck. The late Mr. John Hitchens and myself recently contemplated doing something towards resuscitating this valuable old mine, but he was removed from his labours before we had matured our plans.

The north coast of Cornwall is unquestionably the richest district in the kingdom in silver-lead, and at some points antimony, copper, and zinc ores also abound, and it has been a lasting surprise to me that so many of our best miners should seek distant shores to give scope to their talent and energy, with such a rich field going begging at home.

However, some mines have of late been brought into shape during the great depression we have had in the lead trade, and this is as it should be, for with a better market these mines will be the first to reap the benefit, and at the head of those we may reckon upon Perran Silver-lead Consols reaping the reward they so well merit, for after overcoming great difficulties in pumping out the water and putting their mines in order, we find they are opening rich courses of silver-lead, large piles of which are accumulating at surface.

Bettws-y-Coed, Nov. 14.

CHAS. KNEEBONE.

## OLD SHEPHERDS, AND THE PRESS.

SIR.—Certain branches of the Press are again busy attaching the four properties in Cornwall known as East Wheal Rose, Old Shepherds, Mounts Bay Consols, and Tresavean. One would have thought that now the success of these concerns is practically ensured it would have preferred for the sake of its own reputation not to have raked up its past diatribe against them, and the only explanation I can think of is that somebody connected with this enterprising journal must have been caught "bearing" the market, and found himself among the unfortunate individuals called upon to pay backwardation for non-delivery of shares. When an attack is fair and straightforward shareholders may begin to feel a little shaky, but the present onslaught is of so vicious a nature as to be easily seen through. Insinuation as to dishonesty in the way of receiving commissions by some of the officials is too vague to be proceeded against by law, but if "Money" really desires to protect the public against the machinations of dishonest men let it boldly state who they are, and then shareholders will be on their guard, and know how to protect themselves.

Their second charge—that a lot of machinery is being piled on the mines of no present, and not likely to be of any future, use—I can personally vouch for as untrue. I was over some of the mines a short time back, and while all the machinery was of the best and most useful nature, I remarked the absence of some which might be of great future, if not present, use. The answer I got from the captain was no expenditure was permitted on machinery or any other article until it was found that it was likely to repay the outlay made on it. Indeed, some of the mines would have been in a more forward state to-day had not the directors adopted the very conservative course of finding the ore before erecting the machinery to draw and dress it. Hundreds of tons of stuff are now awaiting crushing at Mount's Bay, for the simple reason that the erection of the stamping engine was only commenced when the ore ground was proved to be profitable. Unfortunately previous attacks from the same quarter came when shares of these companies were in the hands of weak holders, who were frightened out of them, and accepted any price they could get. Now matters are different, and those who hold them are firm believers in their future prosperity, and not likely to be affected by any scare that may be raised against them.

J. W. R.

Liverpool, Nov. 14.

OLD SHEPHERDS.—Although many Cornish mines have been flooded by the heavy rains of the past 10 days, the engine at this mine has not only succeeded in keeping the water, but has lowered it considerably. The mass of ore reported last week as having been found at the 26 fathom level it is believed stands intact to the bottom of the mine. It has not yet been driven on, but every necessary preparation is being made with the view of its rapid development, and the drawing engine is in course of erection.

BEDFORD UNITED.—The accounts prepared for presentation at the meeting, on Thursday next, show a loss on the six months, ended Oct. 31, of 4232. 9s. 11d.; a balance at bankers of 7812. 2s. 6d.; and outstanding liabilities 7591. 16s. 9d. The value of the machinery and plant, stores, copper ore and muriatic acid at surface, &c., is 3952.

THE PIONEER MINING COMPANY.—A petition for winding-up this company has been presented to the Court of Chancery. The nominal capital of the company was 100,000*l.*, in 1*s.* shares, but only 35,000*l.* had been issued, and the whole of that had, it was stated, practically been expended, 12,700*l.* having been paid in cash and shares to the promoters. The debts amounted to a considerable sum, but it was believed that the assets, if carefully realised, would be sufficient to pay all the creditors in full. There was no opposition to a winding-up order, but counsel for five creditors alleged that the petition was collusive, the petitioner being the managing director and one of the

principal promoters of the company, and asked on that account that the petitioner should not have any preference in the nomination of the liquidator. Mr. Justice Fry said it was the duty of the Chief Clerk to appoint an impartial and independent person to act as liquidator, and he saw no reason to suppose that in the present case special instructions were necessary. He, therefore, made the common order,

## REPORT FROM CORNWALL.

Nov. 16.—If prices only went up as easily as they go down perhaps even now November might substantially redeem its character, and certainly a good deal of the disappointment felt in the early part of the present week might have been avoided. However, we all know by experience that it is very much easier to get two drops out of the market than one rise, and it is of very little use protesting against the operations of a natural law, which applies to other matters besides metals. It certainly does seem to us that the fewer hands tin—for that of course is our chief consideration—passes through between the mines and the actual consumers the better for then the advantage of the market might be taken at once, without waiting, often hopelessly, for official improvements in the standards. But this end cannot be obtained without the introduction of "home smelting," and that seems far too big a reform for the most extensive mine to undertake. Probably the present smelting discussion will very soon come to an end, with the usual no result. It is so easy to point to a grievance; so difficult to get half a dozen people of influence to agree on a remedy.

And it is the same thing with regard to the question of dues. The necessity for a reform in that direction has been brought, and with the best intentions, upon the carpet again. But of what use is it? Very few people seem able to get beyond propositions of what may be called the "tinkering" order; and in this case the principle is wrong altogether. The present system of levying dues, largely modified as it has been in detail from time to time, really dates from the time when the mine lord was almost invariably a co-adventurer, and when the Cost-book principle of balancing up at each account was carried out in all its integrity. There is no longer the same ruling identity of interest, and this must be taken into account before any satisfactory solution can be arrived at. No man is entitled to be paid anything unless he has something to sell, and no mineral lord has anything to sell if it cost more to raise ore on his property than the ore fetches in the market. The question of dues ought always to be kept distinct from payment for land occupied and surface damage, and when that is done it is clear that dues are only legitimately payable upon profits. The lord under such conditions incurs no risk, and at the same time always gets his money's worth for what he has to sell, while the adventurers are not mulcted in penalties for the misfortune of losing their money beyond what is really inevitable in mining speculation.

Perhaps mining reforms would have a much better chance if they were not always undertaken in periods of depression. If there was a fair effort made to put mining affairs upon a sounder basis when matters were fairly prosperous, there would be far more heart in the work. The grievances remain precisely the same, and if they are for the time less felt it is certain that by-and-by there will be periods when they will force themselves into prominence again. We want a little more looking ahead.

The past few days have shown an improvement in the weather, which is very acceptable. The perpetual rains day after day, week after week, without intermission, which have caused such serious floods in so many parts of the kingdom, have made themselves unpleasantly felt in the county, as we anticipated they would be, by the increase in the water charges, in some cases to a really serious extent. We must hope, now that the bright weather with which we seem likely to be favoured, will not develop into frost, and interfere with the dressing-floors.

There has been a decided failure of justice somehow at Camborne. It is thoroughly well known that many fatal accidents have occurred, and some very recently, through miners violating the regulations by riding in the skips. Warnings have proved of no avail; the risk of death is set at naught, discharge has no terrors in the present state of the mining labour market, so an attempt has been made to put the law in operation. On Tuesday five miners were charged before the magistrates at Camborne with riding in a skip. They knew they were guilty and so pleaded, but under the advice of the Bench withdrew this plea, and put in one of not guilty. Then, when the case proceeded, the Bench decided that, though the agents would be responsible in such a case, the men were not, and so dismissed the complaint. If this is really the law it is a very stupid law, and we are glad the dictum of the magistrates is to be remitted to a superior court. It is due, however, to the Bench to say that they regretted they could not see their way to inflict punishment, and that the Chairman—Mr. Pendavas—expressed a hope that the law would speedily be altered. Before it is we shall probably have a dozen more such "accidents" to record.

## REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Nov. 16.—Labour questions are this week very much to the front, and they are stiffening the prices of coal and iron. Coalmasters especially are firmer, and are unprepared to book far forward. Crucial prices are stoutly upheld at 11s. and 10s. for Dudley qualities of furnace coal; forge coal tapers down to 6s. 9d.; coke sells better, at 24s. to 25s. for best Durham sorts, and 22s. to 23s. delivered for second best sorts; South Yorkshire cokes are priced at 15s. 6d. to 16s. per ton delivered; best native ironstone is in small supply, at 15s. 6d. to 17s. per ton; and Northampton (common) stone is selling freely at 6s. delivered. Pigs are quiet, at 42s. to 45s. for cinder sorts. Manufactured iron remains on the basis of 8*s.* for marked bars, and 6*s.* 10*d.* for common.

A meeting of the Mill and Forge Wages Board was held in Birmingham, on Wednesday, under the presidency of Mr. Alderman Avery, the recently appointed President, to hear the claim of the men for an advance of 10 per cent. Mr. Capper, the secretary of the operatives' section, stated that during the last eight years the men had submitted to eight reductions, ranging from 2½ to 10 per cent., and that, now that the state of trade was better, they were justified in taking advantage of it. At present the tonnage rate in Staffordshire was 2½ per cent. below that in the North of England, whereas the Staffordshire men were really entitled, on account of the great skill required, to 5 per cent. more than the Middlesbrough men. Mr. Benjamin Hingley, the Chairman of the masters' section, submitted that the men not only had at the present time the full maximum price to which they were entitled—8*s.* per ton for puddling—but that they had also been receiving since February an increase that was not justified by the sliding scale, and which had been a burden on the masters. He denied that there had been the improvement in the trade stated by Mr. Capper. Mr. Avery said he would consider his decision.

A representative Conference of South Staffordshire and East Worcestershire colliers was held at Tipton, on Monday, when it was resolved that the present sliding scale, which regulates the wages of 15,000 men, ought to be modified by the insertion of a minimum which should be the present rate of wages—3*s.* 8*d.* per day or "stint" for Thick coalmen, and 2*s.* 10*d.* per Thin. It was also resolved that the men were entitled to a further immediate advance of 5 per cent. on wages, and that the Chairman of the Coalmasters' Association should be urged to advance coal on Dec. 1, with the view of giving the men still another advance of 4*d.* per shift on the Thick coal seams and 2*d.* in the Thin coal, which is equal to 10 per cent. A deputation was appointed to wait upon Mr. Fisher-Smith to arrange for a full meeting of the coal trade to discuss these several propositions.

The board of the Midland Counties Federation of Miners met in Wolverhampton on Tuesday, when delegates representing, it is computed, 50,000 men were present. The delegates complained that the Cannock Chase men had not received the 10 per cent. advance which was their due, resulting from the recent rise of 1*s.* per ton on coal, and that neither had the miners in the county of Salop received any advance. The Federation determined to support these districts in their efforts to secure a rise; recommended the Cannock Chase men

to negotiate a different wages agreement with their masters, to that at present existing, and resolved to hold a special conference of miners representing the Midland Counties early in the new year to discuss various questions of interest to their body.

MR. C. M. PERCY, of Wigan, delivered a lecture on Monday to the North Staffordshire Mining Institute "On Winding Appliances, Past, Present, and Future." The chair was taken by Mr. John Brown (the President), and there was a good attendance of members. Mr. Percy said he did not claim any special knowledge, nor did he intend to express prejudiced views nor trot out any pet hobby. Having given an interesting account of the winding appliances of the past, he described those of the present as consisting of quick working, powerful direct-acting engines, in couples, either vertical or horizontal engines, with balanced side or Cornish valves, working non-condensing with high-pressure steam generated in internally-flued boilers; iron or steel ropes, round or taper or flat, working upon vertical, cylindrical, or spiral drums; cages of iron or steel working upon conductors, either rigid or flexible, and the connection between the winding rope and the cage made by a detaching hook. As to the winding appliances of the future, he mentioned one or two directions which the improvements should take, and in doing so he mentioned appliances which had already been introduced here and there, and seemed to have about them the elements of success. Mr. Percy gave various explanations by the aid of large diagrams. Both in his introductory remarks and in acknowledging a vote of thanks, which was heartily accorded to him, Mr. Percy advocated the establishment of a mining school at Stoke similar to that at Wigan.

At Stourbridge Sessions on Friday Mr. Joseph Moore was summoned by Mr. James P. Baker, Government Inspector of Mines, for contravening the 20th section of the Mines Regulation Act, 1872, by employing persons in the Lower Delph Colliery without first having proper communication with every seam in the mine for the time being at work by means of shafts or outlets, and also proper apparatus for raising or lowering persons at such shafts or outlets. Mr. T. Walker (Wolverhampton) supported the information, and Mr. Perry defended. Mr. Scott, assistant inspector, deposed to there being but one engine at the colliery for raising and lowering people in the two shafts. More than two years ago it was promised that a separate apparatus should be provided as required by the Act. About 600 men worked at the pits. Mr. Perry, for the defence, said that another engine had been ordered, but it had been delayed. The bench fined defendant £1 and costs, with solicitor's fee, and allowance to witness.

**ATTEMPTED SALE OF THE HOMER HILL COLLIERY.**—The Homer Hill Colliery, situated at Cradley, near Stourbridge, was offered for sale by auction, on Thursday afternoon, at the Midland Hotel, Birmingham, by Mr. Henry King, auctioneer, Stourbridge. The colliery was described as being freehold property, and very valuable, comprising 32 a. 2 r. 35 p. of surface, and 90 a. 0 r. 11 p. of mines, including the celebrated Thick or Ten-yard coal (nearly one-third of which is ungot), the Brooch coal, and Brooch ironstone, yielding a large tonnage per acre of excellent ironstone, of which about 3 acres have been worked. There were also the beds of the famous Stourbridge fire-clay, which had been proved and but little worked except for trial purposes. The Thick coal was said to be capable of a weekly output of from 1500 to 2000 tons. The colliery it appears belonged to a company, who, however, worked at a loss, and they subsequently mortgaged the property to Messrs. Swindell, of Stourbridge. The mortgages ultimately seized the colliery, and the works were stopped. The miners, of course, were thrown out of work, and they claimed from the company a fortnight's wages in lieu of notice. An action was heard in the County Court, and a verdict was given in favour of the men. At the sale there was a large attendance, including many of the miners who were originally employed at the works. Immediately after the solicitor (Mr. King) had read the conditions of sale, Mr. H. Southall, a miner, addressing the auctioneer, said that on behalf of the other workmen he wanted to know when they were going to be paid. They brought an action in the County Court against the company, and obtained a verdict, but their wages had not been paid.—The Auctioneer: This is not the County Court.—Mr. Southall: We are here to put in our claim. I hope we are in an assembly of honest Englishmen. We want nothing but our rights, which we have striven for and obtained by law.—The Solicitor: This is a sale by the mortgagees.—Mr. Southall: We have taken legal advice on the matter. The company promised to pay us by Oct. 12, but we have not yet received any money.—The Auctioneer: Sit down, Sir.—Mr. Southall: We are here to-day to put in our claim.—The Solicitor: Your claim is not affected by what is done here to-day.—Mr. Southall: I suppose we are to be done out of our claim altogether.—The Solicitor: You have your remedy whether the colliery is sold or not.—Mr. Southall: Are we to go without our money?—No answer was vouchsafed to that question, and the auctioneer proceeded with the sale. He spoke in highly elogetic terms of the colliery, pointing out its importance and value, but his eloquence did not elicit a bid. After waiting some time, and vainly endeavouring to get an offer, Mr. King withdrew the property.—*Birmingham Daily Post.*

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Nor. 16.—There has been quite a lull in the mining districts of Derbyshire of late now that the wages has been conceded to the men, all agitation having ceased, although there is still some talk about reducing the output; but that is scarcely necessary, seeing that lately some of the pits have been the reverse of active, and have had to play a day in the week. The demand for house coal has slackened considerably, although prices have undergone no change. The Clay Cross Company have been raising a large tonnage of coal, and it is expected that the pit in which the explosion took place will shortly be in a condition for work to be resumed at it. It may be said that a large quantity of the coal raised in Derbyshire and the adjoining county going to the metropolitan and other southern markets, owing to the comparatively low rate charged by the railway companies, and in this respect the counties named have a considerable advantage over the West Riding, Lancashire, and other districts. At the present time the demand is principally for house coal. Last month, when there was a rush to buy coal in anticipation of a strike on the part of the miners, the Clay Cross Company sent nearly 30,000 tons to London, whilst 12 collieries in Derbyshire were credited with upwards of 140,000 tons amongst them. But the rate has been checked, and the probability is that prices will come down some little at least. Steam coal is comparatively quiet, although the railway companies take an average tonnage, and there has been no falling off in the quantity used in the production of iron. Gas coal has been going off tolerably well; but there is scarcely so much doing in engine coal as there was two or three weeks ago, whilst prices were not so good all round. At the ironworks in the Chesterfield and other districts there has been no material change for some time past, there being a large output of pig, especially at the Staveley and Sheepbridge Works. Stocks of pig are by no means large, for the demand has been steady for the Lancashire, Staffordshire, and other districts. In manufactured the production has not been what may be called heavy for a considerable time past, but a fair business has been done in Sheffield in finished bars by one firm.

Trade in Sheffield seems to improve more than otherwise, the heavy departments in particular being in a highly active state. Armour-plates are being most extensively produced of different thicknesses, some now being made for an English corvette being about 9 in. thick. One of these was tested a few days ago at Portsmouth and gave almost extraordinary results, so far as resisting power went. The demand made upon the resources of both Brown's and Cammell's for these plates is such that the orders now in hand will keep all hands fully employed for a great many months to come. Fortunately this important branch has not travelled away from the town, nor is it now likely to do. There has been an increased production of Bessemer lately, a larger quantity being now required for the rail mills, as well as in the shape of billets. All kinds of railway material, including springs, tyres, and axles, are in good request. In crucible steel also there is more being done just now for light as well as for structural purposes, a considerable quantity being also absorbed in the production of wheels for mining wagons or curves. The cutlery houses are well employed all round in table and pocket knives, as well as in ornamental goods suitable for fancy cases and presents. Prices of the best qualities, however, have gone up, there having been a marked increase in the value of elephants' tusks, which most likely are becoming scarce. Scissors and shears, as well as most kinds of edge tools are in steady demand. The engine-works are fairly employed, as are the foundries, most being done in heavy castings. The coal trade of the district is not so active as it has been, nor are the prices of manufacturing fuel quite so firm. There is a large production of coke throughout South Yorkshire, and for this there is a good demand, a considerable quantity being sent to the ironworks in North Lincolnshire.

The necessity for registering the number of men descending a mine in the morning, and seeing that they all return to the surface at the close of each shift, has just been exemplified by the death of two men at the Stratford Main Colliery, near Barnsley. On Monday two men went to work in the mine and should have come out about 2 o'clock; but nothing transpired until a little girl, meeting one of the workmen who was returning home about 5 o'clock, asked him if Henry Holling was working a double shift. The man returned to the colliery and descended with two others, when they found the men—Holling and another named Hudson—under a heap of dirt, and on being got out they died shortly afterwards. It was the duty of the master wasterman to have visited the place where the deceased were, but did not do so, otherwise the men, in all probability would have been now alive. The jury, in returning a verdict of "Accidental Death," said that if a more perfect system of registration of the men coming out of the pit had been adopted, the probability was that the men's lives would not have been lost.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Nor. 16.—The total average advance of the wages of the colliers during the present year is 12½ per cent. A second advance in the price of coal, making a total of 2s. per ton, has been made; but it is said that the masters will not reap much advantage from this advance at present, inasmuch as the bulk of their contracts were made before the advance. Another fatal accident, by which two workmen have lost their lives, has this week been added to the many which have taken place during the last three years in the Taly-Sarn Slate Quarries, Nantlle. This accident was caused by the snapping of a chain on an incline, by which the two men who were ascending were precipitated to the bottom of the quarry.

I must again express my regret that no public record is kept of the production of the whole of the slate quarries of Wales. Excepting the returns made by the underground quarries, which are much fewer than the open ones, we have no knowledge of the extent and variations of this important industry. The same is true of the limestone, settstone, and building stone quarries. Will some Welsh Member of Parliament move that these returns be obtained?

The three coal producing counties of this district are Shropshire, Denbighshire, and Flintshire, the coal fields of each being only separated from the others by disturbances or depositions subsequent to the formation of the whole coal field, and the whole three having many features in common. The total production of coal in the three counties last year was 3,563,097 tons, being an increase on the production of the year before of 320,929 tons. Denbighshire alone produces one-half of the entire quantity, and it supplied the increase of last year. An industry peculiar to the Flintshire coal fields is that of oil shales, of which 10,727 tons were raised last year, against 11,183 raised in 1880. Shropshire also has its peculiarity in the production of iron pyrites from the coal measures. Its production in 1881 was 1662 tons as compared with 732 tons in the previous year. Another important industry in connection with the coal fields of the three counties is that of fire-clay and fire-clay products; 41,030 tons of fire-clay were raised in 1881 and 44,532 tons in 1880. Denbighshire is the chief home of this industry, its average production being about 25,000 tons. The centre of fire-clay manufacture is Ruabon, in Denbighshire; but we must not forget the excellence and artistic beauty of the fire-clay productions of Broseley and Madeley, and the porcelain works of Coalport, in Shropshire.

Shropshire, too, is a large producer of barytes, of which it yielded, chiefly from the Wootherton Mine, on the borders of Montgomeryshire, 3328 tons last year, and 2783 tons the year before. In Wales, the only mine now producing this mineral is the Pennant, which is worked in the upper silurian shales that underlie the carboniferous limestone in the Vale of Clwyd. Then it is gratifying to see that Montgomeryshire has given 60 tons of phosphite from the Cwm-gwen mine. The chief mine in the county, the Berwyn, has not been working lately. I cannot but think that with the increased scarcity of this mineral, there must be a fairly good future for this industry in North Wales. Then Shropshire produced 388 tons of calcspar—from the Snaifelhead Lead Mine, I believe. In the adjoining county of Cheshire, the salt production increased from 2,645,000 in 1880 to 2,298,220 tons in 1881, while the production of the counties Stafford and Worcester on the other side of the district, reached 235,750 tons—an advance of 750 tons. It will thus be seen that in the various minerals we have referred to, the trade is on the whon in a healthy state of progress in the whole district.

#### TRADE OF THE TYNE AND WEAR.

Nor. 16.—The weather having moderated the shipments of coal and coke during the past week have been very considerable; but the Coal Trade does not show material change, and prices of best coal of all kinds do not advance so quickly as was expected, still there is an evident tendency to a rise for fuel of all kinds, and also a rise in miners' wages. In Durham the miners are contributing to this advance by restricting the output to a considerable extent, especially at the house coalworks, where the restriction is said to amount in some cases to 25 per cent. The demand for steam coal is now rather quiet, and the demand for gas coal is very strong, while the negotiations for contracts for next year show that the general increase of price is demanded for gas and manufacturing coal. The export list shows that during last month there was a large increase in the exports from Newcastle, Sunderland, and Hartlepool to foreign ports, and there was also a large increase in the shipments of coal and coke to other ports. The increase in the exports of goods other than coal and coke is very striking in the cases of Middlesborough and Hartlepool; this is, of course, due to the large exports of iron. The exports of coke are very large for the time of year. Newcastle exported 24,785 tons of coke last month, an increase over the quantity for the corresponding month of last year of 2500 tons; Sunderland exported 3121 tons, an increase of 1300 tons; West Hartlepool exported 4773 tons, an increase of 2800 tons; and Middlesborough exported 5132 tons, an increase of 2000 tons. Prices of coke for shipment next year have shown an increase, though not as yet a large one, and there are indications of a better export of coke next year. Shipments of coal from the Wear to the Thames have been very large during the past few days, and there is a tendency towards the use of larger vessels—that is, colliers from 1000 to 1500 tons. The Whitworth Colliery, near Spennymoor, which has been closed some time, is shortly to be refitted for work, having come into the hands of Mr. Johnson, of Durham. A new shaft is also to be sunk at Willington-lane Ends, Spennymoor, in connection with the Binclester Colliery. The Walbottle Coal Company, who have been sinking a new shaft for some time near to Lemington-on-the-Tyne, has intersected a fine seam of coal 4 ft. 3 in. in thickness. There are other thin seams expected at a lower point, and some fine beds of fire-clay have already been met with.

A very alarming accident occurred at the East Holywell Colliery on Friday in the working shaft, one of the cages loaded with coal left the guides, and coming into contact with the descending cage the shaft was blocked, and the guides so much damaged as to render its repair a work of some difficulty. About 200 men and boys were in the mine at the time, and although there is a second shaft there was no means of bringing the men up the shaft. When the shaft was partially cleared food was passed down to the men and boys by means of lines, and all of them were safely brought out after having been imprisoned 20 hours. The lives of the men were never in danger, but it is certainly unpleasant to be imprisoned in a mine for such a length of time, and this accident appears to suggest the necessity for having means of bringing out the hands employed at the second shaft on all mines.

There was a meeting on Saturday between the members of the Steam Coal Trade Association and the delegates representing the Northumberland miners, for the purpose of discussing the proposed new basis for the sliding-scale. Very little progress was made. These miners appear to be very unsettled on this question; many of them are in favour of dispensing with a sliding-scale altogether, and resorting to the old system. The question will be discussed at a future meeting.

The pig-iron trade has been quiet, though there has been a better

feeling than last week; the tendency of prices has been upwards. The position of the makers at present is firm and good. The stocks of Cleveland iron have been reduced 200,000 tons in thirteen months. There is not much new in the finished iron trade; on the whole, the trade is in a fairly healthy and satisfactory condition. There is a large extent of work in hand. The supplementary return issued by the Board of Arbitration shows that in the first 18 days of the month there were orders for 30,000 tons of finished iron given out. The plate trade is in a very good position; a large amount of orders being on hand. There is little change in the price of any kind of iron. Pig-iron is quoted 45s.; No. 3 and shipstiles, 67.12s.6d.; bars, 67. The coke trade is very firm, and a good demand for coal of all kinds.

At Middlesbrough on Tuesday the market was well attended; but there was no change in prices. Messrs. Connaught's stock of pig-iron is now 101,141 tons, a reduction of 106 tons on the week. The platemakers held a meeting to consider the position of their trade, as prices are considered low as compared with the cost of production. The subject was mooted of restricting the output, and a committee was appointed to consider the matter and report.

**STREET TRAMWAYS.**—Considerable progress has been made in this district in the formation of these tramways, in Newcastle, Tyne-mouth, and Sunderland especially, and locomotives have been tried to work the traffic, but so far with little success. In all those places the bulk of the traffic—in fact, nearly the whole of it—is worked by horse-power, which is not only expensive, but is also a cruel system. The construction of the Gateshead tramways have been commenced, and we understand that those lines are to be worked entirely by means of steam locomotives, which are now in course of construction at the celebrated engineering works of Messrs. Black, Hawthorn, and Co., Gateshead. Those engines are admirably adapted for tramway traffic. They are light and compact. It is the lightest tramway locomotive that has ever been built, as it only weighs 5 tons 14 cwt. in full working order. The boiler is vertical, and the working gear and arrangements are quite novel. In actual working the engine has been fully tested in the tramways at Wigan, and the working expenses are found to be, that is, the traffic can be worked at 4½d. per mile, while the cost of working their roads by horse-power is 9d. per mile. The exhaust steam is rendered completely invisible and noiseless in its escape without the use of condensing water and its many concomitant tanks. This is effected by the exhaust steam being led from each cylinder into two separate chambers attached to the side of the boiler for diffusion and separation of condensed water. From these chambers the escape pipes lead to a central vessel or chamber placed in the furnace at the foot of the uptake when the exhaust steam is exposed to the direct heat of the furnace before escaping quietly and invisibly from the blast pipe. The driving power is not applied direct to the driving-wheels, but by means of gearing from the crank-shaft. This arrangement ensures a steady regular movement of the engine, which is an equal contrast to the working of the other types of engine hitherto used on tramways. This engine is the invention of Mr. Wilkinson, of Wigan, and it has been thoroughly tested on the tramways in that district. The firm above mentioned (Messrs. Black, Hawthorn, and Co., Gateshead) have orders for these engines for the Gateshead tramways, and also for the Tynemouth tramways, and there is no doubt that they will be largely adopted on the lines in this district.

#### TRADE IN SOUTH WALES.

Nor. 16.—The amount of coal sent away, foreign and coastwise in the ten months ending Oct. 31 from the principal South Wales ports was—Cardiff, 4,924,855 tons; Newport, 1,132,726; Swansea, 896,800; Llanelli, 163,049. Patent fuel (same period)—Swansea, 225,696 tons; Cardiff, 145,274. Coke—Cardiff, 25,154 tons; Swansea, 9134; Newport, 5284. Last week the shipments were—Cardiff, 76,604 tons foreign and 18,604 coastwise; Newport, 26,768 foreign and 16,378 coastwise; Swansea, 6456 foreign and 7476 coastwise. The continuous storms have prevented the shipment of coal to the same extent as heretofore, but since Saturday the weather has been more genial, and arrears are being pulled up. Good colliery-screened may be quoted at 11s., but other qualities stand as low as 9s. 3d., while, in rare cases, 11s. 6d. can be obtained for a few choice sorts. The amount of iron sent away in the first ten months of the year from Newport was 155,070 tons; Cardiff, 108,869 tons; Swansea, 5795 tons. Last week 2050 tons were shipped at Cardiff, and 1920 at Newport for Cape Town. The weather has interfered with the arrivals of ore, only 4774 tons having come in from Bilbao at Cardiff, and 7023 from other places. At Newport, 6956 tons have been received from Bilbao, and 3005 from other places. The price stands at from 15s. 3d. to 15s. 6d. per ton.

The tin-plate trade seems as if it is again entering on a period of tribulation. Good coke-mades are quoted at Liverpool at from 16s. 3d. to 16s. 6d. per box. The total demand of the whole country is about 6,000,000 boxes, which can almost be produced in South Wales alone. The value of tin-plates made in 1881, within a radius of four miles from Swansea was 2,500,000, but including Llanelli the total output could be made for nearly 5,000,000 boxes. The price per ton is fortunately falling, and now stands at 89d. per ton. A correspondent of the South Wales Daily News says:—It is, in the present state of the block tin trade, very interesting to notice the statistics of that trade, owing to the fact that some of our leading men have predicted an increase in value and a rise; instead of the rise, however, we have a drop of nearly 3d. per ton. Surely the reason can easily be seen in the following particulars, showing that the supply exceeds the demand:—In October, 1880, the importations were—from the Straits and Australian spot, 6647 tons; landing, 420; Straits afloat, 400; Australian afloat, 1606; total, 9073. October, 1881, showed the Straits and Australian spot 5216 tons; landing, 622; Straits afloat, 725; Australian, 1525; total, 8088—a decrease of 985 tons as compared with 1880, while October, 1882, shows Straits and Australian spot 4913 tons; landing, 45; Straits afloat, 1550; Australian afloat, 1681—a decrease of 884 tons on the year 1880, and 899 on 1881. But when other stocks are added, such as Australian tin in Holland, Billiton spot and afloat, and on warrant stocks in America and afloat, we have a total for October, 1880, of 20,633; 1881, 14,639; 1882, 15,795; which shows a decrease in 1882 of 4338 tons as compared with 1881. Again, we notice 12 months' shipments from the Straits and Australia to London, 1880, 10,279; 1881, 13,168; 1882, 14,194—an increased shipment in 1882 of 3915 on 1880, and 1026 as compared with 1881. The Straits and Australia sent to America in 1880, 9984; in 1881, 8174; and in 1882, 8923. There was 1810 tons less sent there in 1881 than in 1880, but in 1882 there is 749 tons more than 1881, which shows America to be looking up tinning business. In October, 1880, tin was 89d.; in October, 1881, 9d. dearer; and in October, 1882, 100d.; while in September it was 107d., to-day it is 89d. In October alone Straits and Australia sent 2350 tons to America. Some tin mine owners still maintain that at the present time sufficient tin is not raised to meet the consumptive demand, and that the stocks have decreased to about 3000 during the last eight months, but they admit that stocks have increased 1100 tons in about six weeks.

It is well that the public should be apprised of the inaccuracy in the prospectus of the Swansea Bay and Rhondda Valley Railway Company, in which the output of coal in that valley has been doubled by the process of treating the annual return as if it were made for six months only, and multiplying it by two. This is an important error, and one which ought to be known by all shareholders and intending shareholders. The directors have promised to apprise all applicants for shares of the fact, and if that be done the gigantic error will be to some extent remedied.

**TRESAVEAN.**—The recent improvements here are reported to be fully maintained, and large quantities of tinstuff are sent through the stamps daily; the dressing machinery is working well. The further 12 heads of stamps, it is said, will very soon be ready, when a larger number of men will be set to stope as new pitches are opened. From all appearances, it is considered that early and regular dividends may be expected.

## FOREIGN MINING AND METALLURGY.

The tone of the Belgian coal trade continues satisfactory in all respects, and the coalowners of the various mining districts appear to be content with the tone of quotations, and the general current of business. The weather having become colder the demand for household coal has increased in certain localities. This tendency has been accelerated by the fact that field work having terminated for the present farmers find that the moment has come for laying in winter supplies. The demand for industrial coal has also been active in Belgium. Upon the German coal markets quotations have shown a little hesitation; there is nothing astonishing in this having regard to the continued increase in the production of the collieries. The demand is considerable, but it is, nevertheless, exceeded by the extraction. Notwithstanding this several colliery proprietors appear to be increasing their production from day to day. The excessive supplies which result from this policy prevent quotations from rising; they may, however, acquire a little more firmness from the fact that transport difficulties have begun to present themselves in the district of the Ruhr, the Sarre, and Upper Silesia. Whatever may be the future course of affairs it cannot be denied that deliveries have been made upon a considerable scale of late. Thus, in the second half of October the railways accommodating the basin of the Ruhr carried daily 7752 truck loads of coal, as compared with 7281 truck loads daily in the corresponding period of 1881. Coke has been generally in good request in Germany.

The Belgian iron trade remains in much the same state. The great works are, as a rule, well employed, but some firms, whose order-books are less well furnished, are obliged to make reductions, and this throws business into some little confusion, although for the rest a confusion of no great importance. The future, however, is regarded as rather uncertain, and this apprehension reflects itself in a less firm tone. An adjudication has just taken place for locomotives required for the Belgian State railways. The prices obtained showed a notable advance over the rates of corresponding tenders delivered in August, 1881. This fact is attributable probably to the advance in copper, which has compelled locomotive builders to advance their terms. The administration of the Belgian State lines has not yet let a promised contract for carriages and vans, but the present is regarded as a favourable time for such a contract. Belgian casting pig has been well supported at 3*l.* per ton for No. 5, with the usual scale of 2*s.* per ton per number. Some apprehensions have been felt with respect to refining pig in presence of a recoil in prices in Luxembourg pig. At the same time the latter is still relatively above the quotations current at Charleroi. Iron has shown a little hesitation upon the Belgian markets. No. 1 has been dealt in at 5*l.* 8*s.* per ton, but this price will probably not be insisted on in the case of an order of some importance. Girders have maintained former rates, and plates have been in good demand. To return to the adjudication of locomotives for the Belgian State railways, we may state that the lowest terms offered for passenger engines were 200*£* per engine, as compared with 193*£* per engine in August, 1881. The lowest tender for goods engines was 193*£*, per engine, as compared with 186*£*. 18*s.* per engine in August, 1881.

Quotations for iron appear to be reviving a little at Paris, merchants' iron having been only dealt in at that centre at 8*s.* per ton. It is feared, however, that clients of the principal houses will resist any attempt at higher rates, and at St. Dizier attention is being directed to what is regarded as an exaggeration of the means of production. The St. Denis Workshops Company has just brought into operation a powerful rolling-mill capable of turning out about 2000 tons per month. Apart from this, there is no change in the situation, which remains firm. At the last meeting of the forgemasters of the Nord, an advance was even discussed, but the decision of the meeting was in favour of a maintenance of present prices and no more. The tendency to firmness which has been remarked upon the German markets has disappeared, and has been succeeded by a slightly downward movement in the quotations of some descriptions of iron. This remark applies especially to pig and merchants' iron. The fall in pig has been very slight; nevertheless no one would now be disposed to pay 3*l.* 16*s.* per ton for casting pig, or 3*l.* 6*s.* per ton for refining pig, although those rates were current not long since. Bars have been still quoted officially at 7*l.* 5*s.* per ton, but business might be done at 7*l.* 2*s.* per ton, and even at 7*l.* per ton in the case of important transactions. Other descriptions of iron have been better supported upon German markets, especially plates, which have been in good demand upon German account, and have also been forwarded in large quantities to Russia, Holland, and France. The Oberhausen Steel Works Company has obtained a contract for 1022 tons of steel rails at 7*l.* 13*s.* per ton, as well as a contract for 800 tons of fish-plates at 7*l.* 9*s.* per ton. Herr Krupp and the John Cockerill Company have shared a contract for 1390 tons of steel rails to be delivered to the Netherlands State Railways. Herr Krupp took his instalment at 6*l.* 12*s.* 5*d.* per ton. The John Cockerill Company demanded somewhat higher prices.

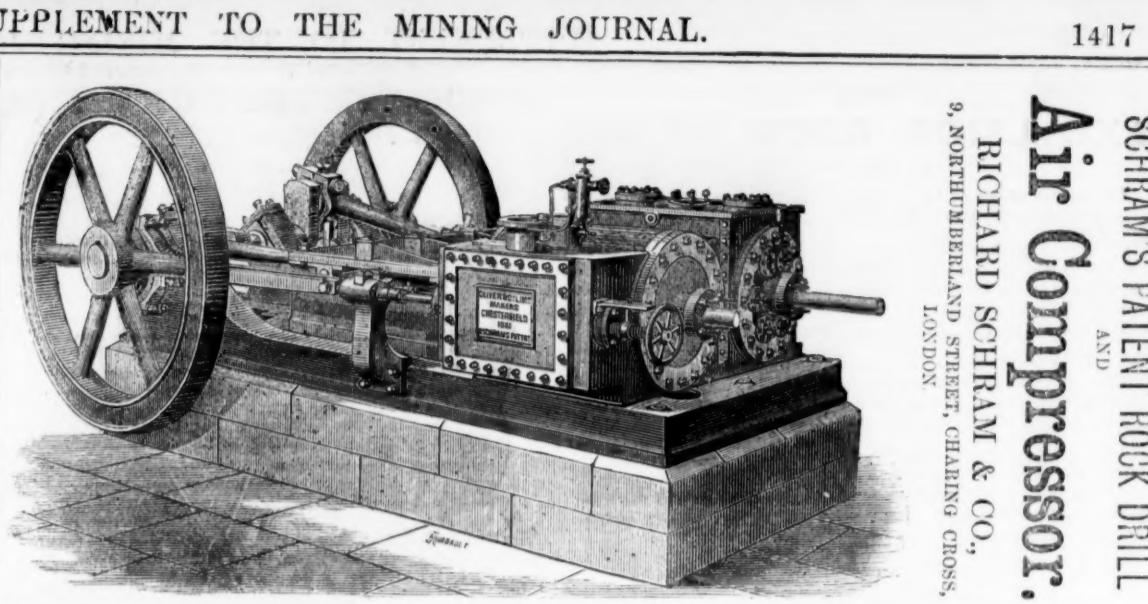
**STATIONARY ENGINE DRIVING.**—The fact of a second edition of Mr. Michael Reynolds's work upon this subject—*Stationary Engine Driving*—a practical manual for engineers in charge of stationary engines. By MICHAEL REYNOLDS. Second edition, revised and enlarged. London: Crosby Lockwood and Co., Stationers' Hall Court—being so soon required may be accepted as conclusive evidence that his labour has been appreciated. To keep the book well up to date Mr. Reynolds has re-written the chapter on the materials of which engines and boilers are made, and that treating of the management of the fire has been greatly extended. His remarks with regard to feeding the fire would, if carefully attended to, result in so important an economising of coal that it would probably repay employers to give their firemen a copy of the book on condition that they read even this chapter, for it is fair to assume that every fireman would prefer to do his work well, and would be glad to receive instruction. In the present edition there is an excellent account of the varieties of British coals, with a notice of their behaviour in the furnace, and directions as to the best method of dealing with the several varieties. The work is well worthy of study by every user of a stationary engine whether he be employer or engineer.

**CASSELL'S ALMANAC.**—Cassell's Illustrated Almanac and the Little Folks Annual for 1882, which have just been issued, will prove welcome in every household where interesting reading and excellent wood-engravings are appreciated. The former, in addition to the usual calendar matter, has two well written stories and a dozen attractive engravings; and the latter, under the title of "Our Happy Family," has a dozen good zoological stories for children, which will not fail to interest those for whom they are written. Their brilliant covers will make them acceptable as presents.

**HOLLOWAY'S PILLS.**—At the change of seasons many persons feel oppressed without knowing why they are so—they are aware something within them is wrong, though they cannot detect the defective organ. A few doses of these powerfully purifying and eminently cooling pills will restore regularity to every part of the system—will cast out all impurities lurking in the frame, and will thoroughly expel the last traces of disorder, however hidden the disease may be—however obscure its cause. With Holloway's medicine relief is insured without risk; erroneous action is rectified without disturbing natural regularity, health is reinstated, and with it return the cheerful feelings which unmistakably tell the recent invalid that all within is right again.

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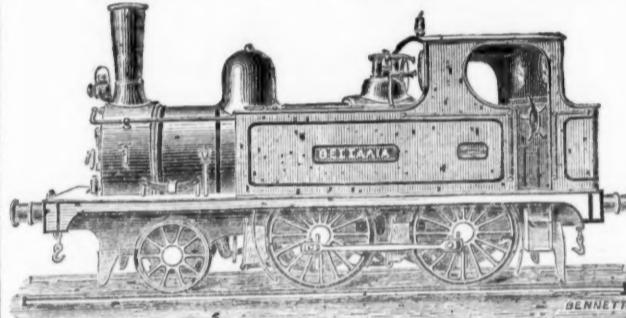
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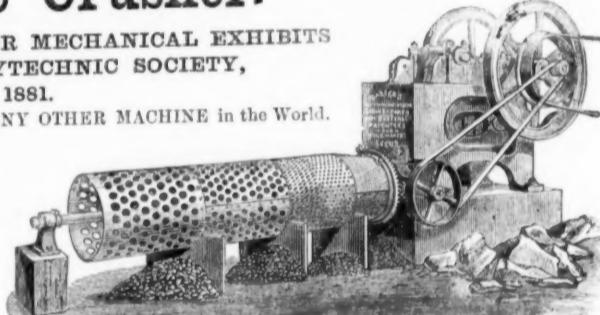
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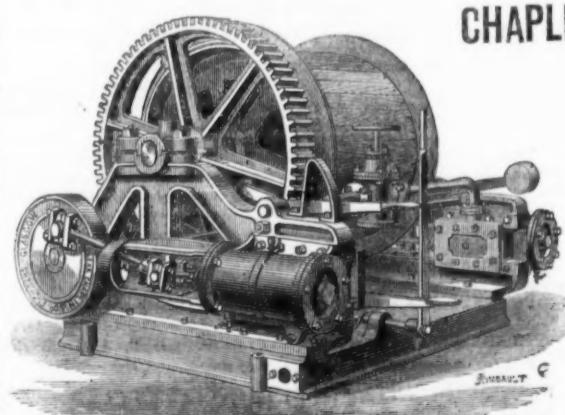
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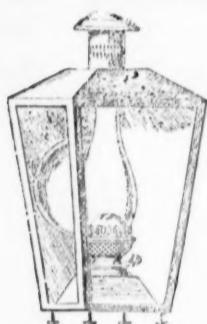
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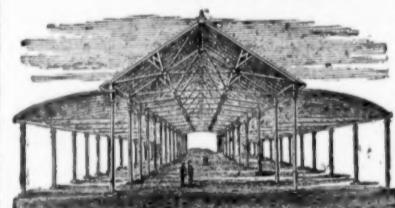
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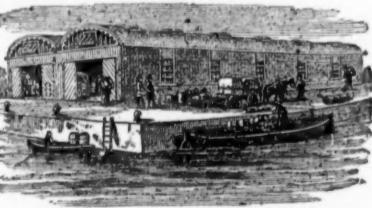
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**SPECIALITIES.****THE "Elmore" Dynamo-Electric Machine**

For **ELECTRIC LIGHTING** (Arc and Incandescence) for Public Streets and Gardens, large Open Spaces, Theatres, Factories, Workshops, Hotels, Houses, &c.

ENTIRE SYSTEM COMPLETE, EFFICIENT, AND INEXPENSIVE.

Special Apparatus for the application of Ozone and other Gases for Bleaching Oils, Sugars, Fabrics, &c.

Complete Outfits. The "Elmore" Machines and appliance for **TIN-PLATE MANUFACTURE**.

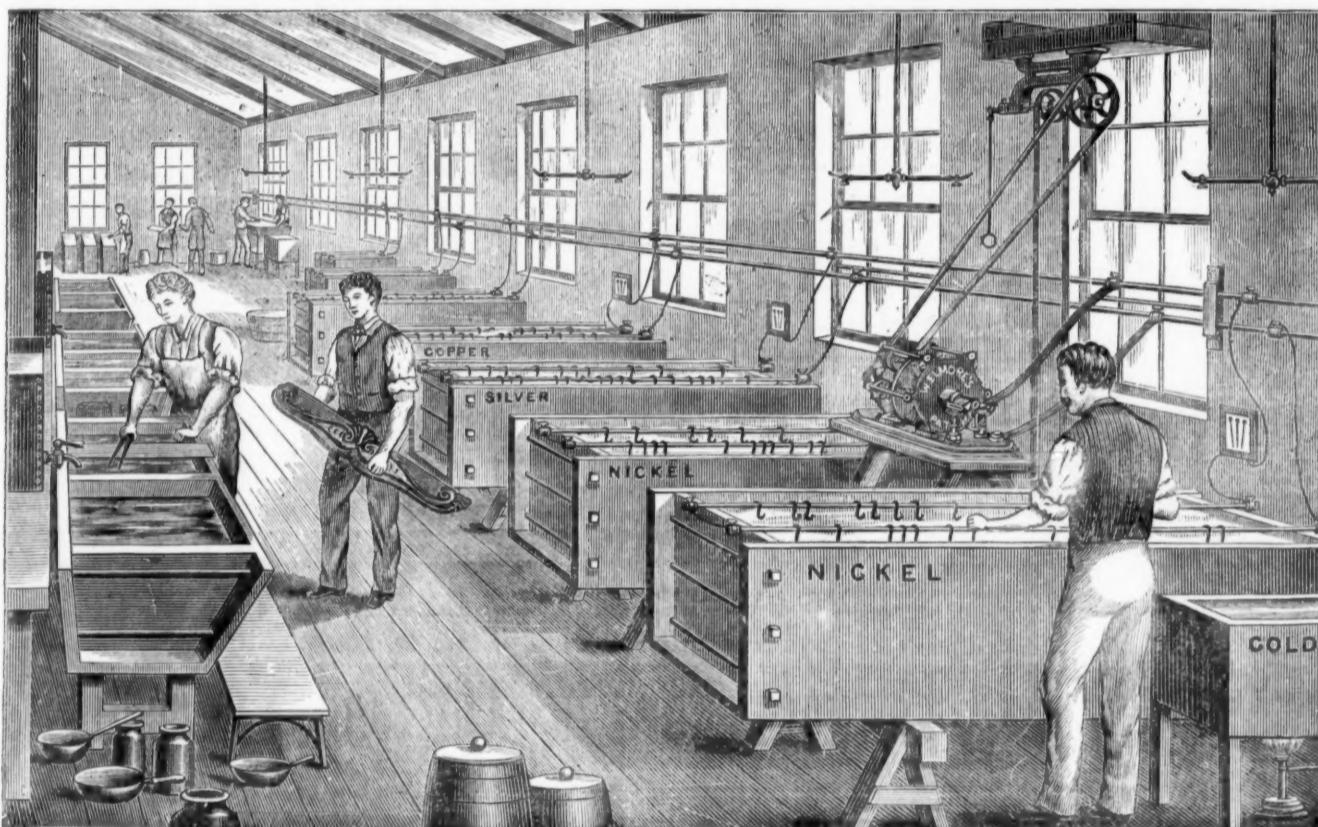
Complete Outfits. The "Elmore" Machines and appliance for **GALVANIZING**.

Complete Outfits. The "Elmore" Machines and appliance for **REFINING METALS**

Complete Outfits. The "Elmore" Machines and appliance for **EXTRACTING METALS FROM ORE**,

Complete Outfits. The "Elmore" Machines and appliance for **GENERATING OXYGEN**, Hydrogen, Chlorine, Ozone, and other Gases.

COMPLETE WORKING OUTFITS SUPPLIED.



The above represents an Electro-Plating Works in which an "ELMORE" PATENT DYNAMO-ELECTRIC MACHINE is being used for the simultaneous deposition of Nickel, Silver, Copper, Bronze, Brass, Gold, Tin, Zinc, &c., from their Solutions.

**TESTIMONIALS, &c.**

## From the "HARDWARE TRADE JOURNAL."

## A MODERN PLATING ESTABLISHMENT.

"Mr. WILLIAM ELMORE, of 91, Blackfriars Road, London, S.E., is busily engaged fitting up the Art Metal Depositing Works of the Electrolytic Company, Charlotte Street, Blackfriars. The Electro-plating tanks of nickel, copper, brass, zinc, and tin, holding several thousands of gallons each (worked by an 'Elmore' Patent Dynamo-Electric Machine, capable of depositing about 500 lbs. of metal per day), and the specially designed and constructed polishing machinery will all combine to constitute this most gigantic and complete arrangement of the kind in the world. Here boiler tubes, each over 20 ft. in length, may be coated with copper, large ornamental iron lamp posts, and similar massive iron structural objects of great weight may be covered with electro-deposited copper, forming, when finished, a complete shell of bronze, which may be nickel-plated, or even silver-plated, if desired. Large rough or polished iron surfaces may be coated with brass, or zinc, or tin. Copper electrotype copies are taken of art subjects, the reproduction being so perfect that the process is used for multiplying plates from which bank-notes are printed, and the most delicate ferns, flowers, leaves, and insects are coated with copper, and afterwards with gold, silver, nickel, &c., for use as ornaments of various kinds. Fenders, fire-irons, grates, &c., may be brassed. The largest marine engines may be nickel-plated in the large nickel-plating plant, worked by the powerful 'Elmore' machine with ease and certainty, which only a few months since would have been pronounced almost impossible. The Electrolytic Company, we understand, express perfect satisfaction with the work already completed by Mr. Elmore, and there is no doubt that with that gentleman's large practical experience the company could not have been in better hands. The entire premises will be lighted by the 'Elmore' system of electric light."

## From the "LONDON MINING JOURNAL."

"The new 'Elmore' Dynamo-Electric Machine can be seen in operation in London, and is considered one of the most wonderful scientific apparatus which has yet been brought before the public; it should be inspected by all who are interested in any kind of metallurgical operations."

"Mr. ELMORE has just received two pieces of ordnance from Her Majesty's Works at Chatham, with an order to nickel-plate the same, together with the carriages upon which they are mounted. Mr. Elmore has done similar work for the Government on previous occasions, and it will be remembered that the screw propellers used on the torpedo boats were nickel-plated by him. The 'Elmore' Dynamo-Electric Machines and complete electro-plating outfits have been supplied to Government Departments at home and abroad."

Dynamo-Electric Machines, Outfits, &c., supplied to (London) Messrs. Thos. De la Rue and Co., Cassell, Petter, and Galpin, The India Rubber Company (Limited), Silvertown, The Nickel Plating Company, Joseph Woodricker, Kelly and Co., A. S. Cattell and Co., &c., &c., (Birmingham) Messrs. Wright and Butler, Joseph Woodward, The Griffin Gilding and Plating Company, and over 500 others.

SEND FOR COMPLETE DESCRIPTIVE CATALOGUE, PRICE 6D.

WILLIAM ELMORE, 91, BLACKFRIARS ROAD, LONDON, S.E.

## From the NICKEL PLATING COMPANY,

13, GREEK STREET, SOHO.  
Your Machine does its work most satisfactorily, and has never once reversed current, which the Weston Machine frequently did."

## From the ELECTROLYTIC COMPANY,

ART METAL DEPOSITING WORKS,  
CHARLOTTE STREET, BLACKFRIARS, LONDON.

"The 'Elmore' Dynamo-Electric Machine and entire outfit which you have supplied to this company have given perfect satisfaction."

## From the NICKEL AND SILVER PLATING WORKS,

2, CHARLES STREET, CURTAIN ROAD, E.C.

"Having had one of the 'Elmore' Patent Dynamo-Electric Machines in constant use for several months, it gives me great pleasure to say that with it I have been able to deposit four times the weight of metal per day which I had been enabled to do with the Dynamo-Electric Machine, which it has displaced in my establishment."

## From the LONDON NICKEL PLATING COMPANY.

"We have much pleasure in expressing our entire satisfaction with the nickel-plating solution, anodes, and Dynamo Machine that you have supplied us with."

## From the DYNAMO-ELECTRIC PLATING WORKS,

2, OLD SWAN LANE, LONDON.

"The quality of the nickel solutions and anodes at these works, which were supplied by you, is most satisfactory in every way. The Dynamo Machine also works excellently, and has given no trouble whatever since it has been started."

AND MANY OTHERS.

PARIS EXHIBITION, 1878. GAINED THE GRAND PRIZE. THE TRIPLE AWARD. Gold Medal, Silver Medal, and Honourable Mention in competition with all the World.

THE BLAKE-MARSDEN NEW PATENT IMPROVED STONE BREAKERS AND ORE CRUSHERS.

ORIGINAL PATENTEE  
AND ONLY MAKER.

# H. R. MARSDEN, NEW PATENT FINE CRUSHER OR PULVERIZER,

FOR REDUCING TO AN IMPALPABLE POWDER, OR ANY DEGREE OF FINENESS REQUIRED,

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AND ORES OF EVERY DESCRIPTION;

Also Cement, Barytes, Limestone, Chalk, Pyrites, Coprolite, &c., &c. These Machines are in successful operation in this country and abroad, and reference to users can be had on application.

PATENT REVERSIBLE CUBING and CRUSHING JAWS, IN FOUR SECTIONS, WITH PATENT FACED BACKS, REQUIRING NO WHITE METAL IN FIXING.

NEW PATENT CRUCIBLE CAST-STEEL CONNECTING RODS.

NEW PATENT RENEWABLE TOGGLE CUSHIONS, &c.

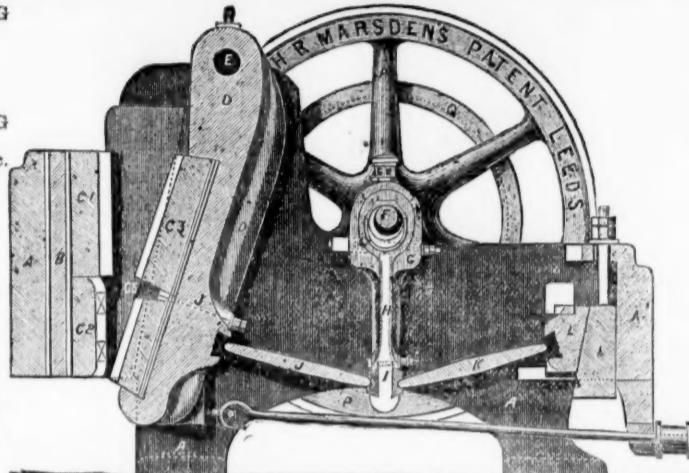
OVER 4000 IN USE.

#### EXTRACT FROM TESTIMONIALS. PULVERISER.

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone, and bring it out like flour."

"The power required to drive it is very small, being from 4 to 6-horse, and the repairs are almost nil."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulveriser both together with 35 lbs."



FOR CATALOGUES, TESTIMONIALS, &c., APPLY TO THE SOLE MAKER,  
**H. R. MARSDEN, SOHO FOUNDRY, LEEDS.**

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ADOPTED BY THE PRINCIPAL CORPORATIONS, CONTRACTORS, MINING COMPANIES, &c., IN ALL PARTS OF THE WORLD.

ROAD METAL BROKEN EQUAL TO HAND, AT ONE-TENTH THE COST.

#### EXTRACTS FROM TESTIMONIALS. STONEBREAKER.

"The 15 x 8 stonebreaker gives perfect satisfaction. It produces a more cubical stone than any others I have seen at work."

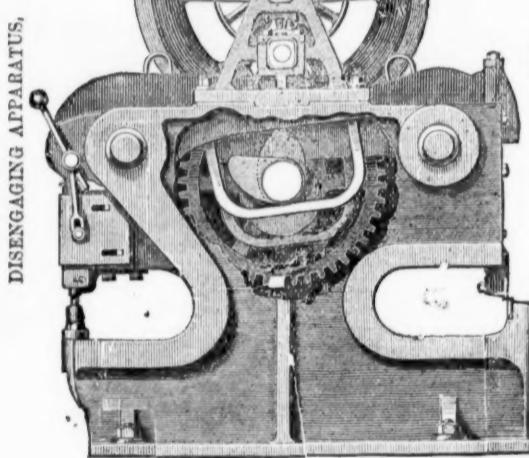
"Your 15 x 10 machine makes the best road metal I have ever seen put through a machine—in fact, comparing favourably with hand broken."

"Your 10 x 7 crusher at the Aruba Gold Mines will crush 90 to 100 tons per 24 hours of the hardest gold quartz to 1" size."

"Some of your testimonials do not give your machines half their due. I have seen men hammering away on a big rock for a quarter of a day which your machine would reduce to the required size in a quarter of a minute. I would guarantee that your largest size machine would reduce more of the Cornish tin capels (which is the hardest rock of England) in a day than 200 men, and at 1-25th the cost."

GREATLY REDUCED PRICES ON APPLICATION.

FLY-WHEELS ON BOTH SIDES.



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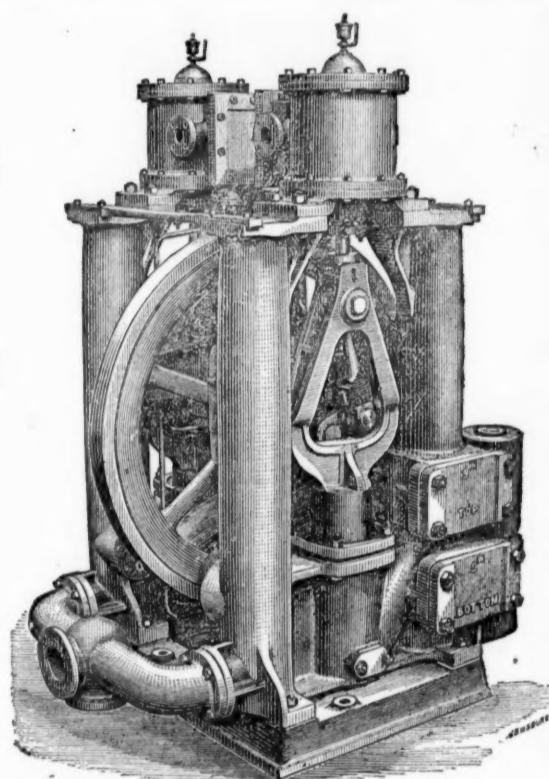
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MACDERMOTT'S PATENT

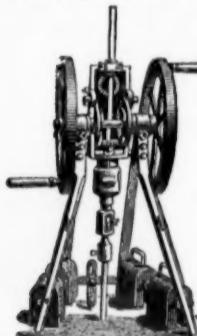
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